

VLBI Software Documentation
Scheduling Program

sked's Catalogs

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Program Reference Manual

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1.0 Catalog System

The catalog system files are ASCII files controlled by N. Vandenberg at GSFC who maintains master copies of the files and a history of changes. The catalog files are used by `sked` for selection of sources, stations, and observing modes when creating a schedule for an experiment.

1.1 Files and Location

The catalog files are available via anonymous `ftp` to `gemini` at Goddard. As changes are made to the catalogs, copies are put on `gemini` in the area `dist/sked/catalogs`. The files are distributed in the standard distribution of `sked/drudg`.

Type	File Name	Contents
Sources:		
	<code>source.cat</code>	source positions
	<code>source.cat.geodetic</code>	geodetic source positions
	<code>flux.cat</code>	source fluxes
	<code>flux.cat.comments</code>	comments on source models
Stations:		
	<code>antenna.cat</code>	antenna information
	<code>position.cat</code>	station x,y,z locations
	<code>mask.cat</code>	horizon and coordinate masks
	<code>equip.cat</code>	equipment IDs
Observing modes:		
	<code>modes.cat</code>	observing modes
	<code>freq.cat</code>	frequency sequences
	<code>rx.cat</code>	receiver setups
	<code>loif.cat</code>	station LO and IF setups
	<code>rec.cat</code>	recording modes
	<code>hdpos.cat</code>	head offsets
	<code>tracks.cat</code>	standard recorded tracks

The standard procedure for changing a catalog entry, such as revising antenna limits or entering a new horizon mask, is to notify N. Vandenberg at GSFC of the new information and its urgency. Notification can be via e-mail, phone, letter, verbal, etc. She will update the appropriate ASCII catalog file, and put the new files on `gemini`, and send a message informing members of the “sked” mail list about the changes.

1.2 Structure

Each catalog file does not stand alone because there are cross references to other catalogs within some of the catalog files. This section outlines how the catalogs are linked together.

Sources. The common names in the `source.cat` file are displayed when the user selects sources for scheduling an experiment with `sked`. These names are used to find the same-named entries in the `flux.cat` and `flux.cat.comments` catalogs. The hierarchy is:

```
source.cat or source.cat.geodetic  
          (IAU names, common names, positions and epochs)  
  flux.cat  
          (source fluxes and models, by common name)  
  flux.cat.comments  
          (comments and “grades” for each source that  
           appears in flux.cat)
```

Stations. The antenna names in the `antenna.cat` file are displayed when the user selects stations for scheduling an experiment with `sked`. Then `sked` uses the two-letter reference codes in the antenna entry to find the corresponding entries in the `position.cat`, `equip.cat`, and `mask.cat` catalog files. The hierarchy looks like the following:

```
antenna.cat      (for each antenna there is a 2-letter code for the position,  
                  equipment, and horizon or coordinate mask that are used to find  
                  the entries in these three catalog files)  
position.cat     (XYZ positions for each fixed, transportable, or mobile antenna)  
equip.cat        (information about the equipment located at the antenna)  
mask.cat         (the local horizon mask at the antenna)
```

Modes. The names in the `modes.cat` catalog, and most of the other information also, are displayed when the user selects observing modes in `sked`. There are two catalog files referenced in each mode, and these in turn reference entries in other catalog files. The structure is shown in the following:

<code>modes.cat</code>	(for each observing mode there are references to a frequency sequence and a recording mode)
<code>freq.cat</code>	(frequency sequences, each may reference a different type of receiver setup)
<code>rx.cat</code>	(receiver setup types, within types each station may reference a different LO/IF setup)
<code>loif.cat</code>	(LO/IF setups)
<code>rec.cat</code>	(for each recording mode, each station may reference a different set of head offsets and track assignments)
<code>hdpos.cat</code>	(sets of head offset positions)
<code>tracks.cat</code>	(sets of track assignments)

1.3 How to add a new station

To add a new station, you can send the information to N. Vandenberg who will make the appropriate entries in the data bases, create new ASCII catalog files, and place them for on `gemini`.

To add a new station locally, you can edit the ASCII catalog files on your computer and later send the information to N. Vandenberg for inclusion in the distributed files. In this case you need to do the steps below to make sure all of the necessary catalogs are updated.

1. Edit the `antenna.cat` file to add the new antenna information. The name must not contain any embedded blanks. The new entry does not need to be in any particular order, although normally entries are in alphabetical order by antenna name. The one-letter ID need not be unique but it is recommended that the ID be unique within the group of stations that normally observe together. This is the code used by the Mark III correlators, where the requirement is that the codes be unique within an experiment. `sked` will automatically change one of the IDs if two stations with the same ID are selected for a single schedule. Put in the position code (must be unique within the `position.cat` file) and a DAT ID or use a dash (-) if you want default equipment (12 passes, 8820 tape length). If the position code is not unique `sked` will take the first one it finds. Put in the horizon mask code if there is a mask for the station.

2. Edit `position.cat` to enter the new position. The two-letter code must be unique: this is the code used through out `sked` and `drudg` and the VLBA correlator. The entry does not need to be in any particular order, although the entries are normally ordered by longitude. Use the same name as the antenna name. The occupation code can be **00000000**. Latitude and longitude are useful for humans to read but are ignored by `sked`.

3. Make a new entry in `equip.cat` if the station uses a non-standard tape length or if you want to use SEFD information (i.e. automatic scan length calculations).
4. Make a new entry in `mask.cat` if the station has a horizon mask.
5. Add the station name to the sections of `rx.cat` for the types of receivers that are present at the station. If the station has a receiver type that is not represented in this file see the next section for how to add a new receiver to the catalogs.
6. Add the station to the sections of `rec.cat` for the modes that it will be recording.

1.4 How to add a new observing mode

To add a new observing mode you can send the information to N. Vandenberg who will make the appropriate entries in the catalog files.

To add a new observing mode locally, you can edit the ASCII catalog files on your computer and later send the information to N. Vandenberg for inclusion in the distributed files. In this case you need to do the steps below to make sure all of the necessary catalogs are updated.

While you are making changes to the catalog files, please refer to the descriptions of formats found in this manual.

1. Edit the `modes.cat` file to enter the top level information about the observing mode. Check the frequency sequence and recording mode catalogs to see if you can use any of the defined entries. If you are using a frequency sequence already in `freq.cat`, list its name, otherwise assign a new name. If you are using a recording mode already defined in `rec.cat`, list its name, otherwise assign a new name.
2. If you need to enter a new frequency sequence, edit the `freq.cat` file. Create a new entry with a unique name. Use one of the standard receiver type group names (see `rx.cat`).
3. Edit the receiver types file, `rx.cat`, to make sure the stations you plan to use are listed under the correct receiver type. If they are not, you can add them if you are sure they use this receiver type.
4. If you need to enter a new recording mode, edit the `rec.cat` file and put in the new name. List the stations that will be observing and give the reference to head positions and track assignments.

5. If you need to enter new track assignments, put the new set into `tracks.cat` using the name you referenced in `rec.cat`.

2.0 Local Catalog Files

The `.cat` files reside on your Unix system in a directory specified in the `sked` control file (refer to the `sked` manual). These files should be refreshed by copying the latest versions from `gemini` whenever a change is announced.

The system `sked` control file is located in a directory specified at the time `sked` was installed. Its name is displayed as the file is read when `sked` starts up. The control file contains directories and paths for files that are read and written by `sked` and `drudg`.

It is possible to edit the source, station, or frequency-sequence information directly in the schedule file and have `sked` use that, but this circumvents the integrity of the catalog system.

2.1 Personal Catalogs

You can maintain a personal copy of any of the catalogs and have that catalog used by `sked` if you list the file name in your personal `sked` control file. For example, you could maintain your own list of favorite sources or stations rather than using the entire Goddard set. Refer to the `sked` manual for information about using a personal control file.

You can copy the system catalog and edit it, keep it in your home directory, and have your own `skedf.ctl` control file point to it. This way you don't have to edit your system catalogs. However, be careful you don't change any essential information inadvertently! Refer to the `sked` manual for information on the control file.

2.2 Editing catalog files

If you want or need to make a change in a catalog file and don't want to or don't have time to make it "official" first, you can edit the appropriate catalog file directly on your system. Be sure to submit the change to N. Vandenberg or you will have to continually re-update your local catalogs when new versions are installed.

Recommended procedures for editing catalog files are as follows:

- 1) Comment out the old version (if any) by inserting a * as the first character of the old line.
- 2) Insert your revised version on a line following the original version, or insert a new entry. The order of the entries is not important for sked because matching is done by name or by code. If you make a new entry, it is recommended that you copy an existing line and edit that to help make sure the format is correct. Before making a new entry, first make sure it doesn't conflict with an existing entry. Refer to the descriptions of the catalog files to see which fields are required to be unique within a file and which fields must match names or codes in other files. This is very important because sked needs complete information.
- 3) Put a comment (line beginning with *) before or after your new/revised entry to indicate what you changed and why. Put your initials and a date in the comment.

3.0 Catalog Descriptions

This section describes the fields in each of the `sked` catalog files. A few things to note:

- The `sked` catalog files (`.cat` files) contain only the most up to date information on sources, antennas, and equipment.
- The order of the lines in the catalog files is irrelevant for `sked` because everything is accessed by matching names or IDs. However, for ease of examination the catalog files are ordered in a “natural” sequence, such as alphabetical.
- The catalogs are all read free field with blanks as delimiters. Thus, no embedded blanks in names are allowed. Either `_` (underline) or `-` (dash) is usually used to join separate words.
- Continuation lines are recognized in any entry if there is a dash (`-`) as the first character (not necessarily the first column) of the line.
- All Names and IDs are upper case by convention. This makes sure that the subsequent software in the Field System Correlator and analysis systems handle the names consistently.

antenna.cat

This file holds information on antenna characteristics such as slewing speed and limits. The antenna names found in this file are the ones presented for selection in `sked`. The other information in the selected entries is automatically collected by `sked` from the `position.cat`, `equip.cat`, and `mask.cat` files. The `$STATION` section of the schedule file is constructed from lines in these files.

Example:

```
* ANTENNA.CAT - antenna data
*
*ID Name Axis Offset Rate1 C1 Lim11 Lim12 Rate2 C2 Lim21 Lim22 Diam PO EQ MS
A GILCREEK XYNS 7.3152 60.0 0 -83.6 83.6 60.0 0 -74.1 74.1 25.0 AL 34 AL
K HAYSTACK AZEL 0.0 120.0 0 0.0 360.0 120.0 0 2.0 88.0 40.0 HA 00 --
Y ARIES_4M AZEL 0.0 36.0 0 0.0 900.0 48.0 0 17.0 88.0 4.0 MP 08
```

Fields:

ID	One-letter ID for this station. The ID does not need to be unique in the catalog, but it must be unique within a schedule. As stations are selected from the catalog by <code>sked</code> , a duplicate ID will be changed by incrementing the ID one letter up in the alphabet. This ID is not used except within the schedule file and by the Mark III correlators. The two-letter ID of the antenna's position is used by <code>sked</code> for displays and listings and by <code>drudg</code> for file names and listings.
Name	8-character antenna name. This name is used throughout other catalog files. Names must begin with a letter.
Axis	Axis type, one of: HADC - hour angle, declination mount XYEW - X,Y mount with fixed axis oriented east/west (e.g. Hobart) AZEL - az,el mount XYNS - X,Y mount with fixed axis oriented north/south (e.g. Fairbanks) RICH - Richmond antenna, unique mount

SEST	- SEST antenna: AZEL with a 30-degree sun avoidance when the sun is above the SEST horizon
ALGO	- Algonquin antenna: AZEL with a HADC master equatorial
Rate1, 2	Slewing rates, deg/min, for axis 1 and 2. The first axis for the different types is X, Az, HA; the second axis is Y, El, Dec.
c1, 2	Constant, in seconds, to be added to slewing time whenever a source change occurs. This accounts for overhead in organizing the software to start slewing, or could be used to allow crudely for ramping up to and down from full slewing speed.
Lim11, 12	Lower, upper limits for axis 1, in degrees.
Lim21, 22	Lower, upper limits for axis 2, in degrees.
Diam	Antenna diameter, meters. This is not used by sked.
PO, EQ, MS	Codes for the position, equipment, and mask information found in the position.cat, equip.cat, and mask.cat files, respectively.

equip.cat

This file holds information on the equipment at a station.

Example:

```
* EQUIP.CAT - station equipment
*
*Antenna ID DAT_name Heads Tape B1 SEFD B2    SEFD SEFD parameters
HAYSTACK 00 HAYSTACK   1    8820 X  900   S    1300
FD-VLBA   FD FD-VLBA  2x56000 2x17640
GILCREEK  34 TVDS-2    1    8820 X  650   S 800 X 1.0 0.954 0.0464 S 1.0
                                         0.974 0.026
KASHIMA   160 KASHIMA   1  8820 X 4100 S 5700
```

(In the above examples the SEFD values wrap around in the document but they appear on a single line in the catalog.)

Fields:

Antenna	8-character name of the antenna. This must be the same name as found in the antenna.cat file. There can be only one entry per antenna in equip.cat. If there are other entries, the first one matched is used.
ID	Code for the Mark III rack ID at this station. This code corresponds to the EQ code in the antenna.cat file. There can be more than one entry for an ID if different antennas use the same equipment. The code should be numeric for Mark III racks.
DAT_name	8-character name for the Mark III terminal at this station. The name and ID form a pair of identifiers for the terminal, e.g. TVDS-1 has ID 03.
Heads	Number of headstacks and density. Specify the density only for high density recording. Use 56000 to indicate high density.
Tape	Number of recorders and maximum length of tape at this station, in feet. For all stations, scheduling tapes of maximum length 8820 feet is currently the convention

for thick tapes. For thin tapes, 17640 is used. If there are two recorders at the station, preceed the footage with 2x.

B1,2, SEFD

1-letter code for the frequency band and corresponding SEFD. The SEFD is the “system equivalent flux density” which is the flux density corresponding to the system temperature. This feature is really only planned for use in X/S schedules. A maximum of two bands is allowed by `sked`. Since the band names are not hard-coded it is possible to use names other than X or S, although this has not been thoroughly tested.

SEFD Parameters

Parameters for dependence of SEFD upon elevation. Refer to the `sked` manual for the form of the equation and the meaning of the coefficients. The first field is the band ID, followed by y , the (possibly) fractional power of $\sin el$. Subsequent terms for one band are the coefficients c_i for the terms. Up to five coefficients may be entered; usually two are sufficient.

flux.cat

This file holds source strength and structure information. Sources may be described by giving step function profiles of source strength as a function of baseline length, or by providing parameters for an elliptical gaussian model.

The information in this catalog is used by `sked` to calculate scan times based on source strength. Refer to the `sked` manual for the equations and algorithms used in the program.

The source data in this catalog file was provided by D. Shaffer, who determined source models from recent VLBI geodetic experiment data. Each of the sources in the `flux.cat` catalog is listed in `source.cat.geodetic`, a subset of the full source position catalog. Comments about the sources and models are provided in a file named `flux.cat.comments`, which should be read by schedulers before selecting sources for a geodetic experiment.

The `$FLUX` section of the schedule file is created by copying lines out of this catalog.

Example:

```
* FLUX.CAT - flux density profiles and source models
*
*NAME Band Type Basel Flux1 Base2 Flux2 Base3 Flux3 Base4
*           Flux MajAx Ratio PA Off1 Off2
3C273B X B 0 20 1500 0 13000
3C273B S B 0 20 1500 0 13000
0552+398 X M 6.0 0.47 1.0 0 0 0
0552+398 S M 3.5 1.2 1.0 0 0 0
```

Fields:

Name IAU name or Common name if available, as found in the `source.cat` file.

Band 1-character frequency band designation. Flux on the selected frequency band(s) will be used by `sked`. These are standard radio astronomy designations, e.g. X, S, K, C, etc. These band names must match band names in the `sequence.cat` catalog.

Type M for model parameters, B for baseline/flux pairs.

If `Type` is `B`, the remaining numbers on the line are baseline/flux pairs.

`Base, Flux` Fluxes are in Janskys; baselines are in kilometers. `Flux1` is the source strength valid for baseline lengths between `Base1` and `Base2`, `Flux2` is the source strength for baseline lengths between `Base2` and `Base3`, `Flux3` applies between lengths `Base3` and `Base4`. Up to eight fluxes and nine baseline lengths may be specified.

A baseline length of 13000 km is used to indicate the longest possible baseline, approximately an earth diameter. In the example above, 3C273B would not be usable on baselines longer than 1500 km due to structure effects. The fluxes and baselines are used as a step function, and no interpolation is done for intermediate baseline lengths.

If `Type` is `M`, the remaining numbers on the line are the six model parameters. Parameters for up to three components may be specified by including up to two additional lines with the same source name, band, and type. All components are added to get the total source flux for SKED's calculations.

<code>Flux</code>	Strength of the component, Jy.
<code>MajorX</code>	Size of the component's major axis, milli-arcsec.
<code>Ratio</code>	Axial ratio of the component.
<code>PA</code>	Position angle of the major axis, degrees, range -180 to 180.
<code>Off1</code>	Distance of the component from some origin, milli-arcsec. Not implemented.
<code>Off2</code>	Position angle of the component centroid wrt the origin, degrees. Not implemented.

freq.cat

This file holds frequency sequences. The names of the sequences as found in this file are referenced in the modes.cat file.

Example:

```

*
*Name Code Sub-groups RXname
*band pol sky_freq SB ChanID BBC# PCFreq Sw
*
* Standard CDP narrow-band sequence.
* X 360 MHz, S 85 MHz.
CDP-SX SX STD SX_STD
- X R 8210.99 U CH1 1 10000.0
- X R 8220.99 U CH2 2 10000.0
- X R 8250.99 U CH3 3 10000.0
- X R 8310.99 U CH4 4 10000.0
- S R 2292.99 U CH13 13 10000.0
- S R 2302.99 U CH14 14 10000.0
....
* Switched set of standard CDP narrow-band
* sequence for VLBA.
CDP-SX SX SW VLBA_STD
- X R 8210.99 U CH1 1 10000.0 1,2
- X R 8220.99 U CH2 2 10000.0 1
- X R 8250.99 U CH3 1 10000.0 0
- X R 8310.99 U CH4 2 10000.0 2
....
```

Fields:

The first line of a frequency sequence sub-group contains these fields:

Name 8-character name of this frequency sequence. All sequences that have the same name are part of a group that could be recorded for the same experiment but with antennas that have different receiver and LO/IF setups.

Code Two-character code name to be used in the schedule. Must be unique only within a schedule. `sked` will not allow you to select two sequences with the same code. Use the same code for different sub-groups of frequency sequences.

Sub-group 8-letter name for the sub-group within a frequency sequence. For example, one sub-group might be using a Mark IV fanout recording format while another sub-group might use the VLBA recording format, or one sub-group might be the full sequence and another the switched sequence.

RXname 8-letter name for the receiver type that is used with this sub-group. This points to an entry in the `rx.cat` file.

Subsequent lines of a frequency sequence sub-group specify the frequencies. Each line has these fields:

band 1-letter code of the RF band.

pol Polarization.

sky_freq Sky frequency, in MHz.

SB The net sideband for this channel.

ChanID The channel identifier, to be linked to the same channel numbers listed in the `tracks.cat` file. Precede the number with the letters CH.

BBC# The physical BBC or VC number used for this channel.

PCfreq Phase cal frequency, in Hertz.

Sw Frequency switching information.

1 means use this frequency in cycle 1.

2 means use this frequency in cycle 2.

0 means do not use this frequency.

1, 2 means use this frequency in both cycle 1 and cycle 2.

hdpos.cat

This file holds the standard head position definitions for different tape track formats.

Example:

```

*
* HDPOS.CAT - standard headstack positions
*
*Name      Pass/direction(offset)
*
MK3A-A
-
  11(-330) 22(0)      31(-275) 42(55)      51(-220) 62(110)
-
  71(-165) 82(165)    91(-110) A2(220)    B1(-55)   C2(275)
MK3A-C
-
  11(-330) 22(-330) 31(-275) 42(-275) 51(-220) 62(-220)
-
  71(-165) 82(-165) 91(-110) A2(-110) B1(-55)   C2(-55)
-
  D1(0)     E2(0)      F1(55)    G2(55)      H1(110)   I2(110)
-
  J1(165)   K2(165)   L1(220)   M2(220)   N1(275)   O2(275)
MK3V-A
-
  11(-319) 21(31)    31(-271) 41(79)      51(-223) 61(127)
-
  71(-175) 81(175)   91(-127) A1(223)   B1(-79)   C1(271)
-
  D1(-31)   E1(319)

```

Fields:

Name	Name given to this set of headstack positions, referenced from the head.cat file.
Pass/direction(offset)	Pass numbers are 1-9, A-Z, a-z. Direction is 1 for forward, 2 for reverse. Offsets are in microns. If the pass number is greater than 100, this indicates the offset is for the second headstack.

loif.cat

This file holds values for the local oscillator frequencies and IF setups for each station, grouped into standard setups. Entries in this catalog are referenced in the `rx.cat` file.

Example:

```
*  
*LOIF_name  
* BBC/VC IF Band Freq SB  
CDP_STD  
- 1 1N X 8080 U  
- 2 1N X 8080 U  
- 3 1N X 8080 U  
- 4 1N X 8080 U  
- 5 1N X 8080 U  
- 6 1N X 8080 U  
- 7 1N X 8080 U  
- 8 1N X 8080 U  
- 9 2N S 2020 U  
- 10 2N S 2020 U  
- 11 2N S 2020 U  
- 12 2N S 2020 U  
- 13 2N S 2020 U  
- 14 2N S 2020 U  
CDPV_VG  
- 1 B X 7600.1 U  
- 2 B X 7600.1 U  
- 3 C X 8080.0 U  
- 4 C X 8080.0 U  
- 5 A S 1540.1 U  
- 6 A S 1540.1 U  
- 7 A S 1540.1 U  
- 8 A S 1540.1 U
```

Fields:

`LOIF_name` Name for the group of station LOs and IF names, corresponds to the name referenced in the `rx.cat` file.

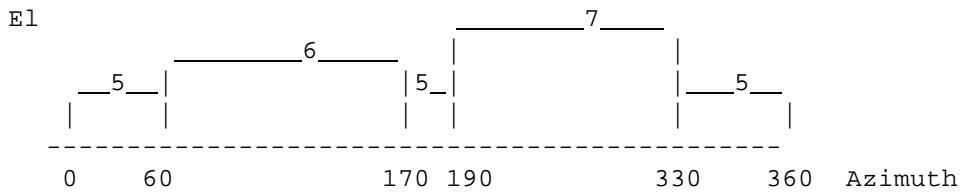
BBC/VC	Physical VC or BBC connected to this LO frequency.
IF	Name of the physical IF. For Mark III or IV, this is 1N, 2N, 1A, 2A for IFs 1 and 2, normal and alternate input or 3N for IF3. For VLBA, this is A, B, C, D.
Band	The one-letter band designator.
Freq	The total LO frequency, MHz, for this channel.
SB	Sideband of this LO channel.

mask.cat

This file holds the horizon and coordinate masks for stations that have them. A station can have both a horizon and a coordinate mask, e.g. the Green Bank 85-3antenna has a horizon mask describing the surrounding mountains as well as a coordinate mask for the hour angle/dec restrictions.

Horizon masks are represented as either a series of line segments or step functions that represent the horizon. For line segments, end points of the lines are entered as ordered pairs of az and el; there are matching pairs of az and el. For step functions, the elevation value is between the two azimuths between which the elevation applies; the mask begins with 0 and ends with 360 degrees. Coordinate masks are step functions with the value of the mask entered between two coordinates.

Step function mask entries represent a series of step functions describing the horizon or coordinate limits. For example, consider the horizon drawn below.



This horizon mask would be entered as:

```
0 5 60 6 170 5 190 7 330 5 360
```

Example:

```
* MASK.CAT - horizon and coordinate masks
*
* Stn.Name ID Az1 El1 Az2 El2 Az3 El3 ...
* Stn.Name ID C11 C21 C12 C22 C13 C23 ...
H GILCREEK AL 0.0 10.0 35.0 6.0 95.0 8.0 115.0 10.0 130.0
- 12.0 195.0 8.0 220.0 5.0 295.0 7.0 310.0 10.0 330.0 11.0 360.0
C NRAO85_3 WV -46.0 70.0 0.0 85.0 86.0
```

Fields:

H or C	First character indicates horizon or coordinate mask.
Stn.Name	8-character position name for which this horizon mask applies. This must be a name in the <code>position.cat</code> file.
ID	2-character code, corresponding to the code that appears in the station's <code>MS</code> field in the <code>antenna.cat</code> file. This code must be unique within this file.
Horizon mask angles	<code>E11</code> is the elevation limit between <code>Az1</code> and <code>Az2</code> , <code>E12</code> is the elevation limits between <code>Az2</code> and <code>Az3</code> , etc. By convention, <code>Az1</code> is 0 and <code>Azn</code> is 360. Units are degrees for all angles. A maximum of 30 pairs of numbers may be entered.
Coordinate mask angles	<code>C21</code> is the limit of coordinate 2 between <code>c11</code> and <code>c12</code> . A maximum of 30 pairs of numbers may be entered.
Coordinates 1 and 2 for each axis type are:	
for AZEL:	<code>c1</code> is azimuth <code>c2</code> is elevation
for XY:	<code>c1</code> is X <code>c2</code> is Y (no examples yet)
for HADC:	<code>c1</code> is dec <code>c2</code> is hour angle

modes.cat

This is the top level catalog for observing modes. It references all the other catalogs that are used to construct the information for the \$CODES section of the schedule file. The names in this file, plus other information in this catalog, are presented to the user by `sked` for selecting observing modes. Additional information is then automatically gathered by `sked` from the other catalogs. Refer to section 1.2 which shows how the catalogs are linked together.

Example:

```

*
* MODES.CAT - observing modes
*
*Mode name    freq.cat chan   bw     samp   bits mode/fan  barrel rec.cat
CDPSX-C-2    CDP-SX    14    2.0    4.0    1      C        none     C
CDPSX-C-4    CDP-SX    14    4.0    8.0    1      C        none     C
NEOS-C-2     NEOS-WB    14    2.0    4.0    1      C        none     C
CDPSX-V4-8B   VGEOSX    8     8.0   16.0    1      1:4      16:1   V4-8-U-1-B
VSOPC-V4-2    VSOP-C     2    16.0   32.0    2      1:4      16:1   V4-2-U-2

```

Fields

Mode name	Name assigned to this mode, up to 12 characters.
freq.cat	Reference to an entry in <code>freq.cat</code> .
chan	Number of channels in this mode. This is used only for display when modes are selected in <code>sked</code> , but it should be consistent with the number of channels defined in the frequency sequence.
bw	Channel bandwidth, in MHz. This value is assigned to all the channels in the frequency sequence.
samp	Sample rate, in MHz.
bits	Whether to sample 1 or 2 bits. This is used only for display when modes are selected in <code>sked</code> , but it should be consistent with the track assignments in the <code>tracks.cat</code> catalog.

mode/fan	The name of the observing mode for Mark III modes, or the fanout designation for VLBA or Mark IV modes. One-letter names are used for the Mark III modes, A–E. The fanout must be one of 1:1, 1:2, or 1:4.
barrel	Designation for barrel roll. This is for display only when selecting observing modes in <code>sked</code> , but should be consistent with the barrel rolls in the <code>rec.cat</code> catalog entry.
<code>rec.cat</code>	The reference to the named entry in the <code>rec.cat</code> catalog.

position.cat

This file holds the positions of each VLBI site.

Example:

```
* POSITION.CAT - site positions
*
*ID  Name          X           Y           Z           Occ.Code W.Lon N.Lat Ref
AL  GILCREEK    -2281545.51 -1453646.06 5756993.66 40476601 147.5 65.0   CDP
HA  HAYSTACK    1492406.55 -4457267.36 4296882.13 72057401 71.5 42.6   CDP
MP  MON_PEAK    -2386287.63 -4802347.57 3444884.48 00000000 ....
```

Fields:

ID	2-character code for this position, corresponding to the code found in the <code>antenna.cat</code> file. This code must be unique in <code>position.cat</code> . This is the code used by <code>sked</code> for all of its listings and displays, and by <code>drudg</code> for file names and listings. The codes in this catalog are almost all the same as the ones in Barry Clark's list of two-letter codes. The exceptions are the multiple-antenna sites like Green Bank and Goldstone where the catalog assigns a unique code to each different antenna XYZ position.
Name	8-character name of the site. This is the same name as the antenna in <code>antenna.cat</code> for fixed antennas. For mobile antennas, this is the name of the mobile site to be occupied during this schedule.
x, y, z	Geodetic coordinates of the site, in meters. Right-handed coordinate system is defined as: x points to 0 longitude, y points to 90 east longitude, z points to the north pole.
Occ. Code	Occupation code or SOD (system occupation designator), as assigned by the CDP DIS. This corresponds to the code which appears in the Field System <code>exper.ctl</code> file.

W.Lon, N.Lat Geodetic west longitude, north latitude in degrees, calculated from the X,Y,Z coordinates. These values are not used by `sked` but are listed in the file for user convenience and for ordering the lines.

Ref The source of the position, *e.g.* a SGP solution number.

rec.cat

This file holds the recording mode information for head positions and track assignments. The recording mode names in this catalog are referenced in the `modes.cat` file.

`rec.cat` is structured like the `loif.cat` and `rec.cat` files where each station could have different information. Here, one or more stations could be recording with a different set of headstack positions and a different set of recorded tracks for the same frequency sequence.

The field following the station name points to information in `hdpos.cat` from which the \$HEAD section of the `sked` file is constructed. The next field points to information in `tracks.cat` for the track assignments in the \$CODES section.

Example:

```

*
* REC.CAT - station head positions
*
*Mode      StnName      HDpos      Tracks      Rec.Fmt(opt) Barrel(opt)
*
A          GILCREEK    MK3A-A     A
-          KOKEE        MK3A-A     A
etc. for each station

V4-8-U-1  GILCREEK    MK3V-A     V4-8U1     VLBA       8:1
-          KOKEE        MK3V-A     V4-8U1     VLBA       16:1
-          ONSALA60    MK3V-A     V4-8U1     Mk34
etc. for each station

```

Fields:

Mode Code name for the observing mode. Must match a name in the `modes.cat` catalog.

Stn.Name Station name, same as the name in the `antenna.cat` catalog.

HDpos 8-letter headstack position set detailed in the `hdpos.cat` catalog.

Tracks Reference to an entry in the `tracks.cat` catalog.

Rec.Fmt. Specify the recording format to use at this station, default is Mk34, which indicates a data-replacement format. The other choice is VLBA, or non-data-replacement format. Only the first letter is checked to indicate a data-replacement mode (M) or a non-data replacement mode (V).

Barrel Specify the barrel roll to use at this station. If no barrel roll is specified, none will be put into the schedule file.

rx.cat

This catalog holds the receiver setups for each station.

Example:

```
*RXname  Stn.Name    LOIFname
*
SX_STD
-      ALGOPARK     CDP_STD
-      ARIES_4M      CDP_STD
-      ARIES_9M      CDP_STD
-      CRIMEA       CDP_STDN
-      DSS15        DSN_STD
-      DSS45        DSN_STD
-      DSS65        DSN_STD
-      EFLSBERG     EFL_STDN
```

Fields:

RXname Name of this receiver setup, as referenced in freq.cat.

Stn.Name Name of the antenna, as in antenna.cat.

LOIFname Name of the LO/IF setup as found in loif.cat.

source.cat

This catalog holds source positions. The epoch of the positions will almost always be J2000, but `sked` will also accept B1950 positions. `sked` processes all positions to J2000 as it reads them, and then processes from J2000 to date internally. The epoch as found in the catalog is preserved in the `sked` file.

The catalog `source.cat.geodetic` is a subset of the `source.cat` catalog. It contains only those sources used for geodetic scheduling and for which flux models are available in the `flux.cat` catalog.

The `$SOURCES` section of the schedule file is created by copying lines from this catalog.

Example:

```
* SOURCE.CAT - source positions
*
*IAUNAME Common    hh mm ss.ssssss  dd mm ss.ssssss Epoch  Vel. Who
0123+456 3CXYZ.45 01 23 45.123456 +45 36 23.12345 2000.0 0.0 CDP
```

Fields:

IAUNAME	Source name in the form hhmm+ddf, where f=fraction of a degree. Sources are ordered by IAU name.
Common	“common” name, by which the source is commonly known.
hh mm ss.ssssss	Right ascension
dd mm ss.ssssss	Declination
Epoch	Epoch of the position, usually J2000.
Vel.	Proper motion. This field is not used but is kept for compatibility with older versions of <code>sked</code> .
Who	The source of the position, <i>e.g.</i> a SGP solution.

tracks.cat

This file holds the lists of standard track assignments. This file should not be modified unless a new Mark III mode is implemented in hardware. This information is automatically picked up by sked when a frequency sequence is selected.

Example:

```
*  
* TRACKS.CAT - standard track assignments  
*  
*Mode Chan Track assignments  
* P(tus,tls,tum,tlm)  
  
C  
- 1 1(15) 2(16)  
- 2 1(1) 2(2)  
- 3 1(17) 2(18)  
- 4 1(3) 2(4)  
- 5 1(19) 2(20)  
- 6 1(5) 2(6)  
- 7 1(21) 2(22)  
- 8 1(7) 2(8)  
- 9 1(23) 2(24)  
- 10 1(9) 2(10)  
- 11 1(25) 2(26)  
- 12 1(11) 2(12)  
- 13 1(27) 2(28)  
- 14 1(13) 2(14)  
V2-8U2  
- 1 1(-1,,0)  
- 2 1(3,,4)  
- 3 1(7,,8)  
- 4 1(11,,12)  
- 5 1(15,,16)  
- 6 1(19,,20)  
- 7 1(23,,24)  
- 8 1(27,,28)  
V2-8U1  
- 1 1(-1) 2(0)  
- 2 1(3) 2(4)  
- 3 1(7) 2(8)  
- 4 1(11) 2(12)
```

```
-      5 1(15) 2(16)
-      6 1(19) 2(20)
-      7 1(23) 2(24)
-      8 1(27) 2(28)
```

V4-8U1

```
-      1 1(-1)
-      2 1(7)
-      3 1(15)
-      4 1(23)
-      5 1(0)
-      6 1(8)
-      7 1(16)
-      8 1(24)
```

Fields:

Mode The observing mode: **A**, **B**, **C**, **D**, **E** for Mark III, VLBA for non-data-replacement modes, or **MK34** for Mark IV data-replacement modes. Mode E is a software mode in which the forward passes are recorded in formatter mode B and the reverse passes in mode C. The numbers following the VLBA or Mark IV modes indicate the fanout.

Chan Channel number.

Tracks Tracks to be recorded for this channel.

P The number of the subpass within the mode. For example, mode C and the VSOP mode are both two-subpass modes, mode E is a four-subpass mode, and the geodetic Mark IV mode is a one-subpass mode.

tus The track which has the upper sideband sign bit recorded. For each subpass, **tus** must be specified. Important note: all track numbers in the schedule file *use Mark III numbering*, even for VLBA or Mark IV modes. If the signal will be fanned out only the first track is listed.

tls The lower sideband partner to **tus**, only appears if both sidebands are recorded in one pass, as in mode A.

tum The track which has the upper sideband magnitude bit recorded.

tls The lower sideband partner to **tum**, only appears if both sidebands are recorded in one pass.

4.0 Catalog Listings

This section contains listings of the current Goddard versions of the catalogs.

antenna.cat

```
*  
* ANTENNA.CAT - antenna information  
*  
* NOTE: Use this file for schedules to be created for observations  
* after March 1, 1990. The nomenclature for XY antennas has  
* been reversed in this file and in the SKED 3/90 version.  
* Refer to the catalog documentation for more information.  
* Updates  
* 921022 NRV DSS15, 45, 65 slew rates increased, el limit lowered  
* 921027 NRV Add Brazil  
* 930122 NRV Change DSS slew rates to full 48 deg/min  
* 930224 NRV Change NATAL to FORTLEZA  
* 930428 NRV Add McMurdo  
* 930603 nrn Axis offset for Kokee  
* 930714 nrn Fairbanks has MO, Yellowknife has 36  
* Lower limit for Fortaleza antenna is 5 degrees (software).  
* 930806 nrn Correct O'Higgins diameter to 9m  
* 930806 nrn Add Mizusawa 10-m  
* 931028 nrn Urumqi terminal is 67, formerly at Seshan. Seshan is "SH".  
* 931108 nrn Update terminal numbers to cross-ref correctly in equip.cat file.  
* 931117 nrn Lower el limits for MV3, set az limits for new trailer orientation.  
* 931119 nrn Add horizon mask pointers for VLBA sites  
* 931123 nrn Revised MV3 az and el limits  
* 940216 nrn Urumqi is using a K4 terminal in spring 94.  
* 940407 nrn Add MV3-LOW as a test (fake) antenna with 0 el limit  
* 940413 nrn Correct az cable limits for Crimea per Nesterov  
* 940519 nrn Corrected Crimea slew rates and limits  
* 940523 nrn Corrected Crimea el limits  
* 940624 nrn Change Crimea az limits by 2 degrees  
* 940729 nrn Change VLBA upper el limits to 88 degrees.  
* 940818 nrn Change az limits for Fortaleza, per JDW  
* 940829 nrn Reduce Bonn az slewing to 15 deg/min per message from Bonn  
* and changed az cable limits per Kurt Standke  
* 941011 nrn Change lower az limit for Medicina per G. Maccaferri  
* 941011 nrn Change Ny Alesund name per C. Ma and M. Eubanks  
* 941219 nrn Initial Yebes data from P. Vicente  
* 941220 nrn Change Bonn az slewing back to 30 deg/min.  
* 950109 nrn NRAO20 initial entry, same as Kokee.  
* 950124 nrn Reduce DSS65 slewing rates.  
* 950217 nrn Reduce DSS45 el slew rate from 48 to 42 per P. Wolken.  
* 950413 nrn Change az, el limits for Kashima-26 per Y. Fukuzaki.  
* 950414 nrn Change Noto az slew from 48 to 43, add constants, per V. Tornatore.  
* 950421 nrn Update Ny Alesund az limits, per S. Rekkedal  
* 950503 nrn Add MIAMI20 per M. Eubanks.  
* 950703 nrn Change Kashima az limits and change constant to 0 per Y. Fukuzaki.  
* 951003 nrn Put in 10 sec constants for Yebes per P. Colomer.  
* 960125 nrn Add CAMBG32M antenna, info confirmed per P. Burgess.  
* 960217 nrn Change upper el limits for DSS15, 45, 65 to 88 deg from 90.  
* 961126 nrn Change az limits for Yebes per P. Vicente.  
* 961210 nrn Change "PO" links for stations with new 2-letter codes.
```

```

* 961212 nrv Add mask link for Effelsberg, correct limits/rates per A. Mueskens.
* 970324 nrv New limits for MV3 per C. Kodak, after limit stop repair.
* 970325 nrv Revised slew rates and constants for Westford per B. Corey.
*
*
*ID Name Axis Offset Rate1 C1 Lim1 Lim1 Rate2 C2 Lim2 Lim2 Diam PO EQ MS
*
G ALGOPARK ALGO 0.00000 24.4 45 41.0 454.0 9.4 45 8.8 86.8 47.0 Ap 03 --
A ARECIBO AZEL 0.00000 23.5 0 0.0 540.0 1.8 0 70.0 89.6 300.0 Ar 03
Y ARIES_4M AZEL 0.00000 36.0 0 0.0 900.0 48.0 0 17.0 89.0 3.8 TL 08
X ARIES_9M AZEL 0.00000 42.0 0 0.0 1440.0 42.0 0 5.5 88.0 9.0 Yk 36
B BR-VLBA AZEL 2.00000 90.0 0 270.0 810.0 30.0 0 2.3 88.0 25.0 Br BR BV
U CEBRER26 HADC 0.00000 20.0 0 -85.0 85.0 20.0 0 -35.0 88.0 25.0 Ce --
X CHLBOLTN AZEL 0.30600 60.0 0 0.0 360.0 60.0 0 5.0 88.0 25.0 Ch --
C CRIMEA AZEL 0.00000 54.0 30 332.0 748.0 36.0 35 3.0 85.0 22.0 Sm 35 CR
E CAMBG32M AZEL 0.00000 22.0 20 270.0 685.0 22.0 20 2.0 89.0 32.0 Ca CM --
D DSS15 AZEL 0.00000 48.0 20 270.0 720.0 48.0 20 6.15 88.0 34.0 15 68
T DSS45 AZEL 0.00000 48.0 20 180.0 630.0 42.0 20 6.15 88.0 34.0 45 39
M DSS65 AZEL 0.00000 15.0 20 270.0 720.0 24.0 20 6.15 88.0 34.0 65 69 65
*B EFLSBERG AZEL 0.00000 30.0 0 33.0 507.0 15.0 0 9.0 89.0 100.0 Eb 06
*B EFLSBERG AZEL 0.00000 28.0 10 30.0 480.0 15.0 10 8.0 89.0 100.0 Eb 06 EF
D FD-VLBA AZEL 2.00000 90.0 0 270.0 810.0 30.0 0 2.3 88.0 25.0 Fd FV FV
F FORTLEZA AZEL 0.00000 40.0 0 171.0 709.0 20.0 0 5.0 88.0 14.2 Ft 01 --
A GILGREEK XYNS 7.31520 60.0 0 -86.0 86.0 60.0 0 -73.5 73.5 25.9 Gc 101
AL
E GOLDECHO HADC 0.00000 15.0 0 -85.0 85.0 15.0 0 10.0 88.0 25.9 GE 68
D GOLDMARS AZEL 0.00000 12.0 0 136.0 672.0 12.0 0 6.0 88.0 64.0 Go 68
P GOLDPION HADC 0.00000 60.0 0 -85.0 85.0 60.0 0 -40.0 88.0 25.9 GP --
Q GOLDVENU AZEL 0.91440 120.0 0 270.0 810.0 120.0 0 6.0 88.0 26.0 GV 16
J HARTRAO HADC 6.70700 22.0 0 -88.0 88.0 28.0 0 -89.0 45.0 26.0 Hh 34 HT
H HATCREEK HADC 0.00000 13.0 40 -80.9 80.9 12.0 40 -38.0 85.0 26.0 Hc 03 HC
K HAYSTACK AZEL 0.00000 120.0 0 0.0 360.0 120.0 0 3.0 88.0 37.0 Hs 00
H HN-VLBA AZEL 2.00000 90.0 0 270.0 810.0 30.0 0 2.3 88.0 25.0 Hn HN HN
H HOBART26 XYEW 7.31520 40.0 30 -82.0 82.0 40.0 30 -74.0 74.0 26.0 Ho 04
*F HRAS_085 HADC 6.70710 29.0 40 -81.5 81.5 20.0 40 -40.0 88.0 25.9 HR 10
I ITAPETGA AZEL 0.00000 60.0 0 270.0 810.0 60.0 0 5.0 88.0 14.0 It --
J JODRELL2 AZEL 0.45800 22.5 0 275.0 685.0 22.5 0 3.0 89.0 76.0 Jb 37
O KASHIM34 AZEL 0.00000 45.0 0 90.0 630.0 40.0 0 6.5 88.0 34.0 Kb KB
Q KASHIMA AZEL 0.00000 60.0 0 10.0 710.0 60.0 0 5.0 88.0 26.0 Ka 160
K KAUAI XYNS 2.40000 60.0 0 -87.6 86.6 60.0 0 -80.8 81.0 9.0 Ku 35 KU
K KOKEE AZEL 0.508 120.0 2 270.0 810.0 120.0 2 0.0 89.7 20.0 Kk 102
K KITTPEAK AZEL 0.00000 14.0 0 270.0 690.0 14.0 0 12.0 88.0 12.0 Kt --
K KP-VLBA AZEL 2.00000 90.0 0 270.0 810.0 30.0 0 2.3 88.0 25.0 Kp KV KV
W KWAJAL26 AZEL 0.00000 750.0 0 0.0 360.0 750.0 0 0.0 90.0 25.6 Kw --
L LA-VLBA AZEL 2.00000 90.0 0 270.0 810.0 30.0 0 2.3 88.0 25.0 La LA
LA
M MADRID64 AZEL 0.00000 12.0 0 230.0 760.0 12.0 0 6.0 88.0 64.0 Ro 69
U MARCUS AZEL 0.00000 660.0 0 0.0 720.0 300.0 0 0.0 90.0 10.0 MR 161
N MARPOINT HADC 6.70000 25.0 0 -82.5 82.5 25.0 0 -40.0 88.0 25.9 Md 09
I MATERA AZEL 0.00000 120.0 0 260.0 800.0 120.0 0 4.0 88.0 20.0 Ma 119
--
M MCMURDO AZEL 0.00000 120.0 0 180.0 540.0 120.0 0 0.0 89.0 10.0 MM MM
B MEDICINA AZEL 1.83000 48.0 0 270.0 810.0 30.0 0 5.0 88.5 32.0 Mc 38
ME
M MIAMI20 AZEL 0.00000 120.0 0 270.0 810.0 120.0 0 0.0 88.8 20.0 Mi 08

```

G	MIZUSGSI	AZEL	0.00000	60.0	0	60.0	720.0	45.0	0	0.0	88.0	5.0	Mz	MZ
MZ														
M	MIZNAO10	AZEL	0.00000	180.0	0	183.0	717.0	180.0	0	3.0	88.0	10.0	Mn	250
MK	MK-VLBA	AZEL	2.00000	90.0	0	270.0	810.0	30.0	0	2.3	88.0	25.0	Mk	MK
MO	MOJAVE12	XYNS	0.00000	60.0	0	-90.0	90.0	60.0	0	-90.0	90.0	12.0	Mo	01
MX	MOJ-VLBA	XYNS	0.00000	60.0	0	-90.0	90.0	60.0	0	-90.0	90.0	12.0	MX	MO
NL	NL-VLBA	AZEL	2.00000	90.0	0	270.0	810.0	30.0	0	2.3	88.0	25.0	Nl	NL
X	NOBEYA45	AZEL	0.00000	20.0	0	120.0	690.0	20.0	0	7.0	88.0	45.0	Nb	32
NT	S NOTO	AZEL	1.83000	43.0	4	290.0	810.0	30.0	2	5.0	88.5	32.0	Nt	NO
WV	W NRAO85_3	HADC	6.70340	30.0	0	-82.5	82.5	20.0	0	-45.0	88.0	25.9	WV	103
WY	X NRAO_13	AZEL	0.00000	40.0	0	270.0	810.0	40.0	0	5.0	88.0	13.6	WX	GB
WX	*X NRAO85_1	HADC	6.70340	20.0	0	-82.5	82.5	20.0	0	-45.0	88.0	25.9	WY	KH
--	*X WIDE85_3	HADC	6.70340	30.0	0	-82.5	82.5	20.0	0	-45.0	88.0	25.9	WX	100
N2	G NRAO_140	HADC	14.9282	18.0	0	-105.0	105.0	18.0	0	-40.0	88.0	43.0	Gb	100
NY	N NRAO20	AZEL	0.508	120.0	2	270.0	810.0	120.0	2	0.0	89.7	20.0	Gn	106
OV	N NYALES20	AZEL	0.00000	120.0	0	260.0	809.0	120.0	0	0.0	89.7	20.0	Ny	66
PT	P OHIGGINS	AZEL	0.00000	90.0	0	90.0	530.0	90.0	0	0.0	88.0	9.0	Oh	100
ST	O ONSALA60	AZEL	0.00000	144.0	20	340.0	740.0	60.0	10	5.0	85.0	20.0	On	02
SC	S ONSALA85	HADC	2.15000	18.0	0	-180.0	180.0	20.0	0	-40.0	88.0	25.0	O8	02
SE	*Z ORION_5M	AZEL	0.00000	180.0	0	102.0	792.0	180.0	0	6.2	89.0	5.0	Gg	10
SE	Z ORION_5M	AZEL	0.00000	180.0	0	170.0	850.0	180.0	0	6.2	89.0	5.0	Gg	10
SE	*Z MV3-LOW	AZEL	0.00000	180.0	0	102.0	792.0	180.0	0	0.0	89.0	5.0	Gg	10
SE	O OV-VLBA	AZEL	2.00000	90.0	0	270.0	810.0	30.0	0	2.3	88.0	25.0	Ov	OV
SE	O OVRO_130	AZEL	0.00000	14.0	0	270.0	690.0	14.0	0	14.0	88.0	40.0	Oo	08
SE	O OVRO_90	HADC	0.00000	15.0	0	-60.0	60.0	15.0	0	-48.0	88.0	34.0	O9	--
SE	U PENTCTON	AZEL	0.00000	12.0	0	230.0	760.0	12.0	0	6.0	88.0	25.0	Pe	--
SE	P PIETOWN	AZEL	2.00000	90.0	0	270.0	810.0	30.0	0	2.3	88.0	25.0	Pt	PT
SE	U QUABBIN	AZEL	0.00000	60.0	0	270.0	810.0	60.0	0	5.0	88.0	18.0	Qb	--
SE	*R RICHMOND	RICH	5.17900	30.0	0	-84.8	84.8	30.0	0	-25.0	86.9	18.0	RI	66
SE	R ROBLED32	HADC	6.70600	20.0	0	-100.0	100.0	20.0	0	-35.0	86.0	32.0	61	--
SE	S SANTIA12	XYNS	0.00000	60.0	0	-82.5	82.8	60.0	0	-81.5	81.9	12.0	St	70
SE	C SC-VLBA	AZEL	2.00000	90.0	0	270.0	810.0	30.0	0	2.3	88.0	25.0	Sc	SC
SE	C SESHAN25	AZEL	0.00000	30.0	0	280.0	800.0	18.0	0	5.0	88.0	25.0	Sh	104
SE	L SEST	SEST	0.00000	55.0	0	290.0	790.0	40.0	0	6.0	88.0	15.0	Se	70
SE	T TIDBIN64	AZEL	0.00000	12.0	0	230.0	760.0	12.0	0	6.0	88.0	64.0	Ti	69
SE	Z TORUN	AZEL	0.00000	60.0	0	0.0	360.0	60.0	0	5.0	88.0	14.0	Tr	--
SE	*U URUMQI	AZEL	0.00000	60.0	0	280.0	800.0	30.0	0	5.0	88.0	25.0	UR	67
SE	U URUMQI	AZEL	0.00000	60.0	0	280.0	800.0	30.0	0	5.0	88.0	25.0	Ur	K4

U USSURISK AZEL 0.00000 30.0 900 270.0 810.0 15.0 900 5.0 88.0 70.0 Us US --
Y VLA AZEL 0.00000 40.0 0 275.0 805.0 20.0 0 10.0 88.0 26.0 Yl 101
Z WERTHOVN AZEL 0.00000 60.0 0 0.0 360.0 60.0 0 5.0 88.0 34.0 WT --
*E WESTFORD AZEL 0.31800 240.0 0 100.0 460.0 180.0 0 4.0 87.2 18.0 Wf 07
WF
E WESTFORD AZEL 0.31800 200.0 10 100.0 460.0 120.0 10 4.0 87.2 18.0 Wf 07
WF
W WESTRBRK HADC 4.95000 15.0 0 -90.0 -90.0 15.0 0 -38.0 90.0 25.9 Dw 11
V WETTZELL AZEL 0.00000 180.0 0 270.0 810.0 90.0 0 2.0 89.0 20.0 Wz 33
WZ
Y YEBES AZEL 0.0 60.0 10 5.0 715.0 60.0 10 10.0 89.0 13.7 Yb 105
*

equip.cat

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* EQUIP.CAT - station equipment
*
*****
* Note: this file will be updated frequently as equipment      *
*        is moved around. This file reflects the most          *
*        recent, current, and/or planned deployment of          *
*        equipment. Do not use this file for planning           *
*        experiments -- check first!                           *
*****
*
* Last update:
* 920915 NRV Added SEFD parameters for R&D stations
* 921005 NRV Added NRAO_851, made NRAO_140 HD
* 930601 nrv Added SEFDs for new stations per DBS
* 930603 nrv Algonquin has TVDS-1 (03)
*           Fortaleza has OVRO_139 (01)
*           Noto, Ny Alesund have RICHMOND (66)
* 930604 nrv Seshan now high density
* 930621 nrv Modified Kokee SEFDs
*           All VLBA thin tape
* 930623 nrv Seshan high density postponed until late July
* 930714 nrv Yellowknife has TVDS-3, Gilcreek has Moj-VLBA
* 930716 nrv Adjust SEFD for Fortaleza, O'Higgins
* 930721 nrv Add Kokee SEFD parameters for elevation dependence
* 930806 nrv Add Mizsawa 10-m
* 930921 nrv Change Seshan to high density, VLBA
* 931028 nrv Urumqi terminal is 67, formerly at Seshan
* 931029 nrv Update IDs written on tape and read by correlator.
* 931119 nrv Add SEFD parameters to all VLBA stations
* 940127 nrv Change VLBA to 14-pass tapes
* 940411 nrv Add MV3-LOW test entry for 0 deg elevation
* 940523 nrv Change Crimea to 3000/2000 uncooled values (conservative)
* 940719 nrv NOTO will have its own terminal (soon?)
* 941011 nrv Change Ny Alesund name per C. Ma and M. Eubanks
* 941024 nrv Ny Alesund SEFE elevation-dependence parameters per DBS
* 950109 nrv Initial entry for NRAO20, copied from Kokee.
* 950216 nrv SEFDs for NRAO20 per D. Shaffer.
* 950410 nrv Hobart SEFD parameters per D. Shaffer.
* 950503 nrv Add MIAMI20 per M. Eubanks.
* 950518 nrv MIAMI20 is uncooled.
* 950920 nrv Modify MEDICINA SEFDs and parameters per D. Shaffer.
* 950927 nrv New SEFDs for YEBES, per D. Shaffer from EUROP3 data.
* 951012 nrv Lower SEFDs for Algonquin per D. Shaffer, for cooled rx.
* 960220 nrv Allow "passes" to be bit_density per station.
* 960409 nrv Change "passes" to "headstacks", 1 or 2 (for Mark IV testing)
*           including bit density.
* 960417 nrv VLBA stations are high bit density as of 960430.
* 960605 nrv Replace Matera's SEFDs with values from DBS.
* 960624 nrv Replace Santiago's SEFDs with values from DBS.
* 960819 nrv Make NRAO20 high density, thin tapes
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* 960912 nrv Santiago's X-band SEFD 5000 per DBS.
* 961112 nrv Change X-band to 900 for Ny Alesund and Kokee per DBS.
* 961212 nrv Add SEFDs for Effelsberg per A. Mueskens.
* 970117 nrv Update Matera's SEFDs after wide-banding.
* 970214 nrv Make Green Bank low density, thin tape for experiments
*           to be processed at Mark III correlators.
* 970307 nrv Update Noto's SEFDs per D. Shaffer.
* 970324 nrv DSS15 is Mark IV, thin tape. DSS65 will be thin tape, as
*           will DSS45. Leave all at low density for Mk3 correlators.
* 970325 nrv Westford is Mark IV, thin tape, normal density.
* 970328 nrv Westford, 15, 45, 65 all high density.
*
* ID:       the electronics rack ID corresponding to the DAT_Name
* DAT_Name: a name assigned to the DAT
* Heads:    number of headstacks, 1 or 2, followed by "x56000" for
*           a high density station
* Tape_len: maximum length of tape at this station, preceeded by "2x"
*           for two tape drives
* X,S SEFD: provided by D. Shaffer, all are on a consistent scale.
* SEFD par: parameters for SEFD vs. elevation function
*
*Antenna   ID   DAT_Name   Heads  Tape_len   X   SEFD    S   SEFD   SEFD parameters
  ALGOPARK 03   TVDS-1     1      8820   X   200     S   250
  ARIES_4M  08   MV2_4M     1      8820   X  64000   S  80000
  ARIES_9M  36   TVDS-3     1      8820   X  7600    S  6500
  *MOJAVE12 01   OVRO_130   1      8820   X  2750    S  3100
  BR-VLBA   BR   BR-VLBA  1x56000  2x17640 X  500     S   400  S  0.1 -2.087 3.087 X  0.5
  0.731 0.269
  CRIMEA   35   TVDS-2     1      8820   X  3000   S  2000
  DSS14     68   DSS15      1      8820   X     0    S     0
  *DSS15    68   DSS15      1      8820   X  400     S  250
  DSS15    68   DSS15  1x56000  17640   X  400     S  250
  *DSS45    39   DSS45      1      8820   X  185     S  200
  DSS45    39   DSS45  1x56000  17640   X  185     S  200
  *DSS65    69   DSS65      1      8820   X  220     S  195
  DSS65    69   DSS65  1x56000  17640   X  220     S  195
  EFLSBERG 06   EFLSBERG  1      8820   X     40    S  100
  FD-VLBA   FV   FD-VLBA  1x56000  2x17640 X  500     S   400  S  0.1 -2.087 3.087 X  0.5
  0.731 0.269
  FORTLEZA 01   OVRO_130   1      8820   X  3000   S  3000
  *GILCREEK 36   TVDS-3     1      8820   X  750     S  800  X  1.0  0.954  0.0464 S  1.0
  0.974 0.0263
  GILCREEK 101  MOJ-VLBA   1      8820   X  750     S  800  X  1.0  0.954  0.0464 S  1.0
  0.974 0.0263
  GOLDVENU 16   DSS13      1      8820   X  500     S  350
  HARTRAO   34   TDVS-VX1   1      8820   X  2000   S  1300
  HATCREEK  03   TVDS-1     1      8820   X  525     S  460
  HAYSTACK  00   HAYSTACK   1      8820   X  1050   S  6400
  HN-VLBA   HN   HN-VLBA  1x56000  2x17640 X  500     S   400  S  0.1 -2.087 3.087 X  0.5
  0.731 0.269
  HOBART26  04   HRAS_085   1      8820   X  710     S  915  S  1.0  0.970  0.030  X  1.0
  0.959 0.041
  HRAS_085  10   MV3_5M     1      8820   X  1450   S  900
  JODRELL2  37   JODRELL2   1      8820   X     0    S     0
  KASHIM34  KB   KASHIM34   1      8820   X  550     S  430

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KASHIMA 160 KASHIMA 1 8820 X 2100 S 1100
 KAUAI 35 TVDS-2 1 8820 X 5700 S 5300 X 1.0 0.959 0.0412 S 1.0 0.976
 0.0239
 KOKEE 102 KO-VLBA 1 8820 X 900 S 750 X 1.0 0.9453 0.0547 S 1.0 0.9695
 0.0305
 KP-VLBA KV KP-VLBA 1x56000 2x17640 X 500 S 400 S 0.1 -2.087 3.087 X 0.5
 0.731 0.269
 LA-VLBA LA LA-VLBA 1x56000 2x17640 X 500 S 400 S 0.1 -2.259 3.259 X 1.0
 0.934 0.0660
 MADRID64 69 DSS65 1 8820 X 0 S 0
 MARCUS 161 KASHIMA 1 8820 X 17000 S 12000
 MARPOINT 09 MARPOINT 1 8820 X 0 S 0
 *MATERA 119 MATERA 1 8820 X 3000 S 5000
 MATERA 119 MATERA 1 8820 X 1500 S 850
 *MEDICINA 38 MEDICINA 1 8820 X 1000 S 850 S 1.0 0.962 0.038 X 1.0
 0.931 0.069
 MEDICINA 38 MEDICINA 1 8820 X 310 S 500 S 0.5 0.839 0.161 X 0.1
 -1.26 2.26
 MIZUSGSI MZ MIZUSGSI 1 8820 X 24300 S 76300
 MIZNAO10 250 MIZNAO10 1 8820 X 7250 S 31000
 MK-VLBA MK MK-VLBA 1x56000 2x17640 X 500 S 400 S 0.1 -2.087 3.087 X 0.5
 0.731 0.269
 MCMURDO MM TVDS-X 1 8820 X 15000 S 15000
 MOJAVE12 MO MOJ-VLBA 1 8820 X 2750 S 3100
 MOJ-VLBA MO MOJ-VLBA 1 8820 X 2750 S 3100
 NL-VLBA NL NL-VLBA 1x56000 2x17640 X 500 S 400 S 0.1 -2.087 3.087 X 0.5
 0.731 0.269
 NOBEYA45 32 NOBEYA45 8820 X 0 S 0
 *NOTO NO NOTO 1 8820 X 1725 S 1100
 NOTO NO NOTO 1 8820 X 1000 S 900
 NRAO85_3 103 VLBA85_3 1 8820 X 800 S 550
 NRAO_13 GB VLBASATL 1 8820 X 9600 S 550
 *NRAO85_1 KH KOKEVLBA 1 8820 X 800 S 750
 NRAO_140 100 NRAO_140 1 8820 X 730 S 530
 NRAO20 106 NRAO20 1x56000 17640 X 900 S 600 X 1.0 0.9497 0.0503 S 1.0
 0.9277 0.0723
 *NRAO20 106 NRAO20 1 17640 X 900 S 600 X 1.0 0.9497 0.0503 S 1.0
 0.9277 0.0723
 NYALES20 66 RICHMOND 1 8820 X 900 S 1200 S 1.0 0.979 0.021 X 1.0
 0.962 0.038
 *OHIGGINS OH OHIGVLBA 1 8820 X 6300 S 12400
 OHIGGINS 100 OHIGVLBA 1 8820 X 10000 S 18000
 ONSALA60 02 ONSALA 1 8820 X 2450 S 3200 S 0.2 0.418 0.582 X 0.5
 0.777 0.223
 ORION_5M 10 MV3_5M 2x56000 17640 X 30000 S 45000
 MV3-LOW 10 MV3_5M 1 17640 X 30000 S 45000
 OV-VLBA OV OV-VLBA 1x56000 2x17640 X 500 S 400 S 0.1 -2.087 3.087 X 0.5
 0.731 0.269
 OVRO_130 05 MV1_9M 1 8820 X 810 S 775
 PIETOWN PT PT-VLBA 1x56000 2x17640 X 500 S 400 S 0.1 -2.002 3.002 X 0.25
 0.494 0.506
 *RICHMOND 66 RICHMOND 1 8820 X 2700 S 1800
 MIAMI20 08 MV2_4M 1 8820 X 5500 S 5500
 SANTIA12 70 TVDS-VX2 1 8820 X 5000 S 3000

SC-VLBA	SC	SC-VLBA	1x56000	2x17640	X	500	S	400	S	0.1	-2.087	3.087	X	0.5
0.731	0.269													
SESHAN25	104	SESHAN25	1	8820	X	2000	S	2700						
SEST	70	TVDS-VX2	1	8820	X	8000	S	12000						
*URUMQI	67	URUMQI	1	8820	X	1500	S	1500						
URUMQI	K4	URUMQI	1	8820	X	1500	S	1500						
USSURISK	US	USSUVLBA	1	8820	X	100	S	100						
VLA	65	VLA	1	8820	X	0	S	0						
WESTERBK	11	WESTERBK	1	8820	X	0	S	0						
WESTFORD	07	WESTFORD	1x56000	17640	X	1500	S	1400	S	1.0	0.962	0.0384	X	1.0
0.939	0.0608													
WETTZELL	33	WETTZELL	1	8820	X	750	S	1115	S	1.0	0.934	0.0660	X	1.0
0.948	0.0516													
YEBES	105	YEBES	1	8820	x	3000	S	5000						

flux.cat

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*****
*
* FLUX.CAT - Source models for X and S bands.
* NRV 910925, data from dbs
*   updated by DBS  911210
*   updated by DBS  920310    see also flux.comments.dbs file
*                           do not observe sources marked with *
*   updated by DBS  920605    several new sources added
*                           some old ones "retired"
*
*   updated by DBS  921229    from extended R&Ds, RD 7 & 8
*                           0528+134 core/halo at X
*                           1921-293 core/halo at S
*
*   updated by DBS  930813    from PolarN1/S1, R&D5, NEOS-11, XAsia
*                           several new sources added from Survey
*
*   updated by DBS  931123    R&D-9 and R&D-10, and Northern Survey
*                           (1357+769 added from Survey)
*
*   updated by DBS  940428    CONT-94 (N2, S3, V4/5, S6)
*
*   updated by DBS  941201    R&D-4,5,6,Global,PPM-S3,Polar-S1/S2
*                           two "new" sources from Surveys
*
*   updated by DBS  950606    VLBA (12/94), R&D-1,2, Global, Polar-S2,
*                           STRF-1, & GeoCat-S1; several "new"
*                           sources, especially from Geocat-S1
*
*   updated by DBS  950711    R&D-3,4, Polar-S1, PPM-S1
*                           gives most up-to-date models for CONT95
*
*   updated by DBS  960703    NEOS-149, GTRF-8,10, Golden-Global-1
*                           Tr-Pac, S.Atl; best models for CONT-96
*
*   updated by DBS  961210    GTRF-11, CONT96-B and -F, 96Geo-VLBA-4
*                           best models for early 1997 schedules
*
*   Source Band Type 0.0  Flux Baseline Flux Baseline
*   Name           (Jy) limit     (Jy) limit
*
*   Source      Type Flux MajAx Ratio PA Off1 Off2
*   Name      Band (Jy) (mas)          (mas) (mas)
*
0003-066  X   M   1.5  0.35  1.0   0.0   0.0   0.0
0003-066  S   M   2.3  2.1   1.0   0.0   0.0   0.0
*0016+731  X   M   1.9  0.6   0.5   126   0.0   0.0
*0016+731  S   M   1.4  2.2   0.3   123   0.0   0.0
0048-097  X   M   1.7  0.2   1.0   0.0   0.0   0.0
0048-097  S   M   1.0  0.6   1.0   0.0   0.0   0.0
```

0059+581	X	M	2.0	0.2	1.0	0.0	0.0	0.0
0059+581	S	M	0.9	1.6	0.6	65	0.0	0.0
0104-408	X	M	5.3	0.3	1.0	0.0	0.0	0.0
0104-408	S	M	1.6	0.6	1.0	0.0	0.0	0.0
0106+013	X	B	0.0	1.4	1500.0	0.0	13000.0	
0106+013	S	M	2.1	1.9	1.0	0.0	0.0	0.0
0119+041	X	M	1.2	0.6	1.0	0.0	0.0	0.0
0119+041	S	M	1.2	1.1	1.0	0.0	0.0	0.0
0208-512	X	M	3.0	0.5	1.0	0.0	0.0	0.0
0208-512	S	M	3.3	1.5	1.0	0.0	0.0	0.0
*0212+735	X	M	2.4	0.44	0.6	-40	0.0	0.0
*0212+735	S	M	1.5	3.0	0.3	105	0.0	0.0
0229+131	X	M	1.0	0.60	0.5	75	0.0	0.0
0229+131	S	M	1.2	2.0	0.4	35	0.0	0.0
*0234+285	X	M	2.2	0.8	0.3	-6	0.0	0.0
*0234+285	S	M	2.5	3.5	0.4	-10	0.0	0.0
0235+164	X	M	0.3	0.4	1.0	0.0	0.0	0.0
0235+164	S	M	0.5	1.5	1.0	0.0	0.0	0.0
*0300+470	X	M	1.0	0.4	1.0	0.0	0.0	0.0
*0300+470	S	M	1.3	1.4	1.0	0.0	0.0	0.0
3C84	X	B	0.0	15.0	6000.0	0.0	13000.0	
3C84	S	B	0.0	10.0	1000.0	0.0	13000.0	
CTA26	X	M	1.1	0.6	0.5	58	0.0	0.0
CTA26	S	M	2.2	1.8	0.5	60	0.0	0.0
NRAO150	X	B	0.0	2.1	5000.0	0.0	13000.0	
NRAO150	S	B	0.0	3.2	1500.0	0.0	13000.0	
*0420-014	X	M	3.0	0.60	1.0	0.0	0.0	0.0
*0420-014	S	M	2.9	1.1	1.0	0.0	0.0	0.0
0454-234	X	M	1.4	0.3	1.0	0.0	0.0	0.0
0454-234	S	M	1.1	2.0	0.45	160	0.0	0.0
*0457+024	X	M	1.3	0.7	1.0	0.0	0.0	0.0
*0457+024	S	M	2.4	2.4	1.0	0.0	0.0	0.0
0458-020	X	M	1.2	0.4	1.0	0.0	0.0	0.0
0458-020	S	M	1.5	2.5	0.5	150	0.0	0.0
0528+134	X	M	7.0	0.4	1.0	0.0	0.0	0.0
0528+134	S	M	3.0	2.2	0.6	30	0.0	0.0
0530-727	X	B	0.0	0.2	13000.0			
0530-727	S	M	0.3	1.0	1.0	0.0	0.0	0.0
0537-441	X	M	4.0	0.5	1.0	0.0	0.0	0.0
0537-441	S	M	3.6	1.2	1.0	0.0	0.0	0.0
0552+398	X	M	5.2	0.65	0.7	103	0.0	0.0
0552+398	S	M	3.6	1.35	0.7	103	0.0	0.0
0637-752	X	M	4.5	0.5	0.6	93	0.0	0.0
0637-752	S	M	3.2	2.0	0.3	92	0.0	0.0
0718+793	X	M	0.7	0.7	1.0	0.0	0.0	0.0
0718+793	S	M	0.7	1.5	1.0	0.0	0.0	0.0
0727-115	X	M	2.1	0.4	1.0	0.0	0.0	0.0
0727-115	S	M	2.4	1.5	1.0	0.0	0.0	0.0
*0735+178	X	M	1.7	0.75	1.0	0.0	0.0	0.0
*0735+178	S	M	1.8	1.7	1.0	0.0	0.0	0.0
*0738+313	X	M	2.4	0.6	1.0	0.0	0.0	0.0
*0738+313	S	M	3.0	1.6	1.0	0.0	0.0	0.0
*0742+103	X	M	1.6	0.8	1.0	0.0	0.0	0.0
*0742+103	S	M	4.5	1.8	1.0	0.0	0.0	0.0
0749+540	X	M	1.1	0.4	1.0	0.0	0.0	0.0

0749+540	S	M	1.1	0.6	1.0	0.0	0.0	0.0
0804+499	X	M	0.6	0.3	1.0	0.0	0.0	0.0
0804+499	S	M	0.9	1.1	1.0	0.0	0.0	0.0
0805+410	X	M	0.9	0.4	1.0	0.0	0.0	0.0
0805+410	S	M	0.6	1.0	1.0	0.0	0.0	0.0
*0820+560	X	M	1.6	0.6	1.0	0.0	0.0	0.0
*0820+560	S	M	1.3	1.0	1.0	0.0	0.0	0.0
0823+033	X	M	1.5	0.9	0.3	25	0.0	0.0
0823+033	S	M	1.5	2.2	0.3	14	0.0	0.0
OJ287	X	M	1.3	1.0	1.0	0.0	0.0	0.0
OJ287	S	M	1.2	1.3	1.0	0.0	0.0	0.0
0919-260	X	M	1.1	0.8	1.0	0.0	0.0	0.0
0919-260	S	M	1.3	3.5	1.0	0.0	0.0	0.0
0920-397	X	M	1.0	0.4	0.02	158	0.0	0.0
0920-397	S	M	1.0	4.4	0.35	174	0.0	0.0
4C39.25	X	M	11.0	0.55	1.0	0.0	0.0	0.0
4C39.25	S	M	4.4	1.5	0.5	94	0.0	0.0
OK290	X	M	1.2	1.2	0.0	0.0	0.0	0.0
OK290	S	M	1.3	1.0	1.0	0.0	0.0	0.0
*0954+658	X	M	0.6	0.60	0.15	-20	0.0	0.0
*0954+658	S	M	0.7	1.0	1.0	0.0	0.0	0.0
0955+476	X	M	1.2	0.3	1.0	0.0	0.0	0.0
0955+476	S	M	1.1	0.7	1.0	0.0	0.0	0.0
1034-293	X	M	1.7	0.35	1.0	0.0	0.0	0.0
1034-293	S	M	1.1	0.8	1.0	0.0	0.0	0.0
1044+719	X	M	1.3	0.35	1.0	0.0	0.0	0.0
1044+719	S	M	1.2	0.65	1.0	0.0	0.0	0.0
1053+815	X	M	0.4	0.5	1.0	0.0	0.0	0.0
1053+815	S	M	0.3	1.1	1.0	0.0	0.0	0.0
1057-797	X	M	1.6	0.5	0.7	68	0.0	0.0
1057-797	S	M	1.2	1.0	0.6	50	0.0	0.0
1104-445	X	M	2.1	1.1	0.6	155	0.0	0.0
1104-445	S	M	2.5	2.9	0.4	60	0.0	0.0
1124-186	X	M	0.9	0.3	1.0	0.0	0.0	0.0
1124-186	S	M	0.7	0.7	1.0	0.0	0.0	0.0
1128+385	X	M	1.2	0.3	1.0	0.0	0.0	0.0
1128+385	S	M	0.7	1.0	1.0	0.0	0.0	0.0
1144-379	X	M	1.5	0.3	1.0	0.0	0.0	0.0
1144-379	S	M	1.3	1.2	1.0	0.0	0.0	0.0
*1156+295	X	M	1.4	0.5	0.20	0	0.0	0.0
*1156+295	S	M	1.4	2.6	1.0	0.0	0.0	0.0
1219+044	X	M	0.5	0.25	1.0	0.0	0.0	0.0
1219+044	S	M	0.5	1.9	0.3	172	0.0	0.0
3C273B	X	B	0.0	20.0	1500.0	0.0	13000.0	
3C273B	S	B	0.0	20.0	1500.0	0.0	13000.0	
1255-316	X	M	1.0	0.6	0.4	28	0.0	0.0
1255-316	S	M	0.8	1.5	1.0	0.0	0.0	0.0
1300+580	X	M	0.5	0.25	1.0	0.0	0.0	0.0
1300+580	S	M	0.4	2.	1.0	0.0	0.0	0.0
1308+326	X	M	3.0	0.75	0.6	114	0.0	0.0
1308+326	S	M	3.0	0.7	1.0	0.0	0.0	0.0
1334-127	X	M	4.3	0.4	0.5	140	0.0	0.0
1334-127	S	M	2.5	2.5	0.30	168	0.0	0.0
1351-018	X	M	0.7	0.7	1.0	0.0	0.0	0.0
1351-018	S	M	0.9	1.2	1.0	0.0	0.0	0.0

1357+769	X	M	0.8	0.25	1.0	0.0	0.0	0.0
1357+769	S	M	0.6	0.6	1.0	0.0	0.0	0.0
*OQ208	X	M	1.5	1.3	0.4	-10	0.0	0.0
*OQ208	S	M	1.6	2.0	0.65	-5	0.0	0.0
1424-418	X	M	3.5	0.3	1.0	0.0	0.0	0.0
1424-418	S	M	1.5	1.6	0.5	70	0.0	0.0
*1502+106	X	M	0.9	0.75	1.0	0.0	0.0	0.0
*1502+106	S	M	1.4	1.5	1.0	0.0	0.0	0.0
*1510-089	X	M	2.0	0.55	1.0	0.0	0.0	0.0
*1510-089	S	M	2.5	1.1	1.0	0.0	0.0	0.0
1606+106	X	M	1.3	0.5	0.5	108	0.0	0.0
1606+106	S	M	1.4	1.8	0.6	140	0.0	0.0
1610-771	X	M	2.6	0.5	1.0	0.0	0.0	0.0
1610-771	S	M	1.8	1.3	0.6	140	0.0	0.0
1610-771	S	M	1.	10.	0.3	150	0.0	0.0
*1611+343	X	M	3.2	0.6	0.45	142	0.0	0.0
*1611+343	S	M	3.4	3.0	0.5	162	0.0	0.0
1622-253	X	M	1.2	0.6	1.0	0.0	0.0	0.0
1622-253	S	M	1.9	1.1	1.0	0.0	0.0	0.0
*1633+38	X	M	1.3	0.5	1.0	0.0	0.0	0.0
*1633+38	S	M	2.0	1.4	1.0	0.0	0.0	0.0
NRAO512	X	M	1.0	0.30	1.0	0.0	0.0	0.0
NRAO512	S	M	0.9	0.8	1.0	0.0	0.0	0.0
3C345	X	B	0.0	3.0	15000.0	0.0	13000.0	
3C345	S	B	0.0	6.0	15000.0	0.0	13000.0	
*NRAO530	X	M	5.0	0.6	1.0	0.0	0.0	0.0
*NRAO530	S	M	5.0	3.0	0.4	0	0.0	0.0
1726+455	X	M	0.7	0.5	0.5	65	0.0	0.0
1726+455	S	M	1.1	1.7	0.45	98	0.0	0.0
1739+522	X	M	1.8	0.25	1.0	0.0	0.0	0.0
1739+522	S	M	1.0	1.2	1.0	0.0	0.0	0.0
1741-038	X	M	4.0	0.3	1.0	0.0	0.0	0.0
1741-038	S	M	2.1	0.85	1.0	0.0	0.0	0.0
1749+096	X	M	0.7	0.25	1.0	0.0	0.0	0.0
1749+096	S	M	0.5	2.2	0.3	25	0.0	0.0
*1803+784	X	M	1.6	0.35	0.4	85	0.0	0.0
*1803+784	S	M	1.7	1.7	0.3	92	0.0	0.0
1815-553	X	M	0.5	0.7	0.1	83	0.0	0.0
1815-553	S	M	1.0	1.5	0.6	74	0.0	0.0
1921-293	X	M	12.	0.6	0.4	155	0.0	0.0
1921-293	S	M	8.	1.2	1.0	0.0	0.0	0.0
1954-388	X	M	3.8	0.5	0.5	154	0.0	0.0
1954-388	S	M	2.2	1.1	1.0	0.0	0.0	0.0
1958-179	X	M	2.0	0.5	1.0	0.0	0.0	0.0
1958-179	S	M	1.0	1.0	1.0	0.0	0.0	0.0
2005-489	X	M	1.1	1.4	0.4	68	0.0	0.0
2005-489	S	M	1.0	1.2	0.4	104	0.0	0.0
*2007+777	X	M	2.0	0.6	0.3	85	0.0	0.0
*2007+777	S	M	1.5	1.0	0.45	80	0.0	0.0
2052-474	X	M	0.9	0.6	0.7	135	0.0	0.0
2052-474	S	M	1.2	1.6	1.0	0.0	0.0	0.0
2121+053	X	M	0.5	0.5	1.0	0.0	0.0	0.0
2121+053	S	M	0.6	1.5	1.0	0.0	0.0	0.0
2128-123	X	M	2.4	1.1	0.25	30	0.0	0.0
2128-123	S	M	1.7	3.5	0.3	30	0.0	0.0

2134+00	X	B	0.0	7.0	1500.0	0.0	13000.0	
2134+00	S	B	0.0	6.0	1500.0	0.0	13000.0	
2145+067	X	M	7.0	0.75	0.5	131	0.0	0.0
2145+067	S	M	2.3	1.5	0.5	130	0.0	0.0
*2201+315	X	M	3.0	1.0	1.0	0.0	0.0	0.0
*2201+315	S	M	2.3	1.6	1.0	0.0	0.0	0.0
*2216-038	X	M	2.0	0.5	1.0	0.0	0.0	0.0
*2216-038	S	M	2.0	1.1	1.0	0.0	0.0	0.0
2234+282	X	M	0.8	0.7	0.4	50	0.0	0.0
2234+282	S	M	1.2	1.2	1.0	0.0	0.0	0.0
3C454.3	X	B	0.0	7.0	1500.0	0.0	13000.0	
3C454.3	S	B	0.0	10.0	1500.0	0.0	13000.0	
2255-282	X	M	3.8	0.3	1.0	0.0	0.0	0.0
2255-282	S	M	1.4	4.5	0.05	50	0.0	0.0

freq.cat

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*
* FREQ.CAT - frequency sequences
*
* 951114 nrv NEW. References new rx/if/lo catalogs.
* 960206 nrv Add VSOP and VLBA-GEO.
* 960220 nrv Corrections per D. Shaffer recommendations.
* 960223 nrv Adjust NOTO sequences for CDP per D. Shaffer.
* 960409 nrv Fix typos and other errors per D. Shaffer.
* 960628 nrv Add polarization sequences per B. Corey.
* 961104 nrv NOTO has 14 BBCs now.
* 970331 nrv Add DSN CRF sequence per C. Jacobs
*
* First line:
* Name = 8-letter name for this sequence. All
*         sequences with the same name are part of
*         a group that could be recorded for the
*         same experiment but with different antennas.
* Code = 2-letter code for this frequency sequence
* Sub-group = 8-letter sub-group name, e.g. SUB or
*             SW for subset or switched
* RXname points to an entry in the rx.cat file. There
*         may be different receiver setups for
*         different antennas recording the same
*         frequency sequence.
* Following lines:
* band = band identifier, 1 letter
* pol = polarization, R or L
* sky_freq = sky frequency in MHz
* SB = net sideband for this frequency
* ChanID = channel ID is cross-referenced to tracks.cat
* BBC# = physical BBC or VC assigned to this frequency
* PCfreq = phase cal frequency (same for all channels)
*
* Name Code Sub-group RXname
* band pol sky_freq SB ChanID BBC# PCfreq
*
*****
* Standard CDP narrow-band sequence.
* X 360 MHz, S 85 MHz.
CDP-SX SX STD SX_STD
- X     R    8210.99 U   CH1      1    10000.0
- X     R    8220.99 U   CH2      2    10000.0
- X     R    8250.99 U   CH3      3    10000.0
- X     R    8310.99 U   CH4      4    10000.0
- X     R    8420.99 U   CH5      5    10000.0
- X     R    8500.99 U   CH6      6    10000.0
- X     R    8550.99 U   CH7      7    10000.0
- X     R    8570.99 U   CH8      8    10000.0
- S     R    2217.99 U   CH9      9    10000.0
- S     R    2222.99 U  CH10     10   10000.0

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- S R 2237.99 U CH11 11 10000.0
- S R 2267.99 U CH12 12 10000.0
- S R 2292.99 U CH13 13 10000.0
- S R 2302.99 U CH14 14 10000.0
* Switched set of standard CDP narrow-band
* sequence for VLBA.
CDP-SX SX SW VLBA_STD
- X R 8210.99 U CH1 1 10000.0 1,2
- X R 8220.99 U CH2 2 10000.0 1
- X R 8250.99 U CH3 1 10000.0 0
- X R 8310.99 U CH4 2 10000.0 2
- X R 8420.99 U CH5 4 10000.0 0
- X R 8500.99 U CH6 3 10000.0 2
- X R 8550.99 U CH7 3 10000.0 1
- X R 8570.99 U CH8 4 10000.0 1,2
- S R 2217.99 U CH9 5 10000.0 1,2
- S R 2222.99 U CH10 6 10000.0 1
- S R 2237.99 U CH11 6 10000.0 2
- S R 2267.99 U CH12 7 10000.0 2
- S R 2292.99 U CH13 7 10000.0 1
- S R 2302.99 U CH14 8 10000.0 1,2
* Standard CDP narrow-band sequence, subset of
* 12 BBCs for Noto, 7 at X and 5 at S.
*CDP-SX SX NOTO NOTO_STD
* X R 8210.99 U CH1 1 10000.0
* X R 8220.99 U CH2 2 10000.0
* X R 8250.99 U CH3 3 10000.0
* X R 8420.99 U CH5 5 10000.0
* X R 8500.99 U CH6 6 10000.0
* X R 8550.99 U CH6 7 10000.0
* X R 8570.99 U CH8 8 10000.0
* S R 2217.99 U CH9 9 10000.0
* S R 2222.99 U CH10 10 10000.0
* S R 2267.99 U CH12 12 10000.0
* S R 2292.99 U CH13 13 10000.0
* S R 2302.99 U CH14 14 10000.0
*****
* Standard CDP wide-band S-X sequence. Wide X (720 MHz),
* wide S (125 MHz).
CDPSX-WB WB STD SX_WIDE
- X R 8212.99 U CH1 1 10000.0
- X R 8252.99 U CH2 2 10000.0
- X R 8352.99 U CH3 3 10000.0
- X R 8512.99 U CH4 4 10000.0
- X R 8732.99 U CH5 5 10000.0
- X R 8852.99 U CH6 6 10000.0
- X R 8912.99 U CH7 7 10000.0
- X R 8932.99 U CH8 8 10000.0
- S R 2220.99 U CH9 9 10000.0
- S R 2230.99 U CH10 10 10000.0
- S R 2250.99 U CH11 11 10000.0
- S R 2305.99 U CH12 12 10000.0
- S R 2340.99 U CH13 13 10000.0
- S R 2345.99 U CH14 14 10000.0
* 12-channel CDP wide-band sequence for Noto,

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* 7 at X and 5 at S. Use with CDP wide-band.
*CDPSX-WB WB NOTO  NOTO_WID
* X   R  8212.99 U  CH1    1  10000.0
* X   R  8252.99 U  CH2    2  10000.0
* X   R  8352.99 U  CH3    3  10000.0
* X   R  8512.99 U  CH4    4  10000.0
* X   R  8852.99 U  CH6    6  10000.0
* X   R  8912.99 U  CH7    7  10000.0
* X   R  8932.99 U  CH8    8  10000.0
* S   R  2220.99 U  CH9    9  10000.0
* S   R  2250.99 U  CH11   11 10000.0
* S   R  2305.99 U  CH12   12 10000.0
* S   R  2340.99 U  CH13   13 10000.0
* S   R  2345.99 U  CH14   14 10000.0
* Switched CDP wide-band sequence for VLBA.
CDPSX-WB WB SW  VLBA_WID
- X   R  8212.99 U  CH1    1  10000.0  1,2
- X   R  8252.99 U  CH2    2  10000.0  1
- X   R  8352.99 U  CH3    2  10000.0  2
- X   R  8512.99 U  CH4    1  10000.0  0
- X   R  8732.99 U  CH5    3  10000.0  2
- X   R  8852.99 U  CH6    4  10000.0  0
- X   R  8912.99 U  CH7    3  10000.0  1
- X   R  8932.99 U  CH8    4  10000.0  1,2
- S   R  2220.99 U  CH9    5  10000.0  1,2
- S   R  2230.99 U  CH10   6  10000.0  1
- S   R  2250.99 U  CH11   6  10000.0  2
- S   R  2305.99 U  CH12   7  10000.0  2
- S   R  2340.99 U  CH13   7  10000.0  1
- S   R  2345.99 U  CH14   8  10000.0  1,2
*****
* Modified CDP sequences with narrow X (360 MHz) and
* wide S (125 MHz). For use when VLBA participates and
* no DSN stations.
CDPMODSX CV STD  SX_STD
- X   R  8210.99 U  CH1    1  10000.0
- X   R  8220.99 U  CH2    2  10000.0
- X   R  8250.99 U  CH3    3  10000.0
- X   R  8300.99 U  CH4    4  10000.0
- X   R  8420.99 U  CH5    5  10000.0
- X   R  8540.99 U  CH6    6  10000.0
- X   R  8550.99 U  CH7    7  10000.0
- X   R  8570.99 U  CH8    8  10000.0
- S   R  2220.99 U  CH9    9  10000.0
- S   R  2230.99 U  CH10   10 10000.0
- S   R  2250.99 U  CH11   11 10000.0
- S   R  2310.99 U  CH12   12 10000.0
- S   R  2340.99 U  CH13   13 10000.0
- S   R  2345.99 U  CH14   14 10000.0
* Subset for VLBA.
CDPMODSX CV SUBV VLBA_STD
- X   R  8210.99 U  CH1    1  10000.0
- X   R  8300.99 U  CH4    2  10000.0
- X   R  8540.99 U  CH6    3  10000.0
- X   R  8570.99 U  CH8    4  10000.0

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- S R 2220.99 U CH9 5 10000.0
- S R 2230.99 U CH10 6 10000.0
- S R 2310.99 U CH12 7 10000.0
- S R 2340.99 U CH13 8 10000.0
* Subset of 12 BBCs for Noto, 7 at X and 5 at S.
*CDPMODSX CV NOTO NOTO_STD
* X R 8210.99 U CH1 1 10000.0
* X R 8220.99 U CH2 2 10000.0
* X R 8250.99 U CH3 3 10000.0
* X R 8420.99 U CH5 5 10000.0
* X R 8540.99 U CH6 6 10000.0
* X R 8550.99 U CH7 7 10000.0
* X R 8570.99 U CH8 8 10000.0
* S R 2220.99 U CH9 9 10000.0
* S R 2230.99 U CH10 10 10000.0
* S R 2310.99 U CH12 12 10000.0
* S R 2340.99 U CH13 13 10000.0
* S R 2345.99 U CH14 14 10000.0
*****
* Modified CDP sequences with wide X (720 MHz) and
* wide S (125 MHz). For use when VLBA participates and
* no DSN stations. Subset for VLBA.
CDPMODWB SV STD SX_WIDE
- X R 8212.99 U CH1 1 10000.0
- X R 8252.99 U CH2 2 10000.0
- X R 8272.99 U CH3 3 10000.0
- X R 8512.99 U CH4 4 10000.0
- X R 8752.99 U CH5 5 10000.0
- X R 8852.99 U CH6 6 10000.0
- X R 8912.99 U CH7 7 10000.0
- X R 8932.99 U CH8 8 10000.0
- S R 2220.99 U CH9 9 10000.0
- S R 2230.99 U CH10 10 10000.0
- S R 2250.99 U CH11 11 10000.0
- S R 2310.99 U CH12 12 10000.0
- S R 2340.99 U CH13 13 10000.0
- S R 2345.99 U CH14 14 10000.0
* Subset for VLBA.
CDPMODWB SV SUBV VLBA_WID
- X R 8212.99 U CH1 1 10000.0
- X R 8272.99 U CH3 2 10000.0
- X R 8752.99 U CH5 3 10000.0
- X R 8932.99 U CH8 4 10000.0
- S R 2220.99 U CH9 5 10000.0
- S R 2230.99 U CH10 6 10000.0
- S R 2310.99 U CH12 7 10000.0
- S R 2340.99 U CH13 8 10000.0
* Modified CDP wide-band sequence, subset of
* 12 BBCs for Noto, 7 at X and 5 at S.
*CDPMODWB SV NOTO NOTO_WID
* X R 8212.99 U CH1 1 10000.0
* X R 8252.99 U CH2 2 10000.0
* X R 8512.99 U CH4 4 10000.0
* X R 8752.99 U CH5 5 10000.0
* X R 8852.99 U CH6 6 10000.0

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* X   R  8912.99 U CH7    7  10000.0
* X   R  8932.99 U CH8    8  10000.0
* S   R  2220.99 U CH9    9  10000.0
* S   R  2230.99 U CH10   10 10000.0
* S   R  2310.99 U CH12   12 10000.0
* S   R  2340.99 U CH13   13 10000.0
* S   R  2345.99 U CH14   14 10000.0
*****
* Modified X and S sequences. X 360 MHz, S 100 MHz.
* Allows subsets for limited DSN and VLBA systems,
* use when BOTH DSN and VLBA stations participate.

DSNVLBA AS STD SX_STD
- X   R  8210.99 U CH1    1  10000.0
- X   R  8220.99 U CH2    2  10000.0
- X   R  8250.99 U CH3    3  10000.0
- X   R  8300.99 U CH4    4  10000.0
- X   R  8420.99 U CH5    5  10000.0
- X   R  8540.99 U CH6    6  10000.0
- X   R  8550.99 U CH7    7  10000.0
- X   R  8570.99 U CH8    8  10000.0
- S   R  2220.99 U CH9    9  10000.0
- S   R  2228.99 U CH10   10 10000.0
- S   R  2244.99 U CH11   11 10000.0
- S   R  2292.99 U CH12   12 10000.0
- S   R  2316.99 U CH13   13 10000.0
- S   R  2320.99 U CH14   14 10000.0

DSNVLBA AS SUBV VLBA_STD
- X   R  8210.99 U CH1    1  10000.0
- X   R  8300.99 U CH4    2  10000.0
- X   R  8540.99 U CH6    3  10000.0
- X   R  8570.99 U CH8    4  10000.0
- S   R  2220.99 U CH9    5  10000.0
- S   R  2228.99 U CH10   6  10000.0
- S   R  2292.99 U CH12   7  10000.0
- S   R  2316.99 U CH13   8  10000.0
*****
* CDP wide-band sequence, modified for use with
* Noto. Only S-band channel 12 is modified.

CDPSX-WN WN STD SX_WIDE
- X   R  8212.99 U CH1    1  10000.0
- X   R  8252.99 U CH2    2  10000.0
- X   R  8352.99 U CH3    3  10000.0
- X   R  8512.99 U CH4    4  10000.0
- X   R  8732.99 U CH5    5  10000.0
- X   R  8852.99 U CH6    6  10000.0
- X   R  8912.99 U CH7    7  10000.0
- X   R  8932.99 U CH8    8  10000.0
- S   R  2220.99 U CH9    9  10000.0
- S   R  2230.99 U CH10   10 10000.0
- S   R  2250.99 U CH11   11 10000.0
- S   R  2310.99 U CH12   12 10000.0
- S   R  2340.99 U CH13   13 10000.0
- S   R  2345.99 U CH14   14 10000.0

* for Noto, 7 at X and 5 at S.
*CDPSX-WN WN NOTO NOTO_WID

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* X   R   8212.99  U   CH1      1   10000.0
* X   R   8252.99  U   CH2      2   10000.0
* X   R   8512.99  U   CH4      4   10000.0
* X   R   8752.99  U   CH5      5   10000.0
* X   R   8852.99  U   CH6      6   10000.0
* X   R   8912.99  U   CH7      7   10000.0
* X   R   8932.99  U   CH8      8   10000.0
* S   R   2220.99  U   CH9      9   10000.0
* S   R   2230.99  U   CH10    10  10000.0
* S   R   2310.99  U   CH12    12  10000.0
* S   R   2340.99  U   CH13    13  10000.0
* S   R   2345.99  U   CH14    14  10000.0
*****
* Europe sequence, narrow-band SX with shifted
* S-band to avoid interference.

EUR-SX SX STD  SX_STD
- X   R   8210.99  U   CH1      1   10000.0
- X   R   8220.99  U   CH2      2   10000.0
- X   R   8250.99  U   CH3      3   10000.0
- X   R   8310.99  U   CH4      4   10000.0
- X   R   8420.99  U   CH5      5   10000.0
- X   R   8500.99  U   CH6      6   10000.0
- X   R   8550.99  U   CH7      7   10000.0
- X   R   8570.99  U   CH8      8   10000.0
- S   R   2212.99  U   CH9      9   10000.0
- S   R   2222.99  U   CH10    10  10000.0
- S   R   2237.99  U   CH11    11  10000.0
- S   R   2267.99  U   CH12    12  10000.0
- S   R   2292.99  U   CH13    13  10000.0
- S   R   2297.99  U   CH14    14  10000.0
* European SX Noto, 6 at X and 6 at S.

*EUR-SX SX NOTO  NOTO_STD
* X   R   8210.99  U   CH1      1   10000.0
* X   R   8220.99  U   CH2      2   10000.0
* X   R   8310.99  U   CH4      4   10000.0
* X   R   8420.99  U   CH5      5   10000.0
* X   R   8500.99  U   CH6      6   10000.0
* X   R   8570.99  U   CH8      8   10000.0
* S   R   2212.99  U   CH9      9   10000.0
* S   R   2222.99  U   CH10    10  10000.0
* S   R   2237.99  U   CH11    11  10000.0
* S   R   2267.99  U   CH12    12  10000.0
* S   R   2292.99  U   CH13    13  10000.0
* S   R   2297.99  U   CH14    14  10000.0
*****
* NEOS standard wide-band sequence, modified at
* X and S.

NEOS-WB NW STD  SX_WIDE
- X   R   8182.99  U   CH1      1   10000.0
- X   R   8222.99  U   CH2      2   10000.0
- X   R   8422.99  U   CH3      3   10000.0
- X   R   8562.99  U   CH4      4   10000.0
- X   R   8682.99  U   CH5      5   10000.0
- X   R   8782.99  U   CH6      6   10000.0
- X   R   8842.99  U   CH7      7   10000.0

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- X   R   8862.99  U   CH8     8   10000.0
- S   R   2212.99  U   CH9     9   10000.0
- S   R   2222.99  U   CH10    10  10000.0
- S   R   2257.99  U   CH11    11  10000.0
- S   R   2297.99  U   CH12    12  10000.0
- S   R   2317.99  U   CH13    13  10000.0
- S   R   2322.99  U   CH14    14  10000.0
*****
* GGAO sequence, NEOS wide-band at X, CDP
* modified wide-band at S.
GGNWVSX GN STD SX_WIDE
- X   R   8182.99  U   CH1     1   10000.0
- X   R   8222.99  U   CH2     2   10000.0
- X   R   8422.99  U   CH3     3   10000.0
- X   R   8562.99  U   CH4     4   10000.0
- X   R   8682.99  U   CH5     5   10000.0
- X   R   8782.99  U   CH6     6   10000.0
- X   R   8842.99  U   CH7     7   10000.0
- X   R   8862.99  U   CH8     8   10000.0
- S   R   2220.99  U   CH9     9   10000.0
- S   R   2230.99  U   CH10    10  10000.0
- S   R   2250.99  U   CH11    11  10000.0
- S   R   2310.99  U   CH12    12  10000.0
- S   R   2340.99  U   CH13    13  10000.0
- S   R   2345.99  U   CH14    14  10000.0
* GGAO sequence, VLBA subset
GGNWVSX GN SUBV VLBA_WID
- X   R   8182.99  U   CH1     1   10000.0
- X   R   8422.99  U   CH3     2   10000.0
- X   R   8782.99  U   CH6     3   10000.0
- X   R   8842.99  U   CH7     4   10000.0
- S   R   2220.99  U   CH9     5   10000.0
- S   R   2230.99  U   CH10    6   10000.0
- S   R   2310.99  U   CH12    7   10000.0
- S   R   2340.99  U   CH13    8   10000.0
*****
* 8-channel phase delay sequence for VLBA-only
CDPPHDLY PD STD VLBA_STD
- X   R   8105.99  U   CH1     1   10000.0
- X   R   8175.99  U   CH2     2   10000.0
- X   R   8490.99  U   CH3     3   10000.0
- X   R   8595.99  U   CH4     4   10000.0
- S   R   2220.99  U   CH5     5   10000.0
- S   R   2240.99  U   CH6     6   10000.0
- S   R   2330.99  U   CH7     7   10000.0
- S   R   2360.99  U   CH8     8   10000.0
*****
* 8-channel sequence for geodetic VLBA experiments.
* Same as phase delay but 300 MHz higher at X, to be
* compatible with standard S/X geodetic receivers.
VGEOSX SX STD VG_STD
- X   R   8405.99  U   CH1     1   10000.0
- X   R   8475.99  U   CH2     2   10000.0
- X   R   8790.99  U   CH3     3   10000.0
- X   R   8895.99  U   CH4     4   10000.0

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- S R 2220.99 U CH5 5 10000.0
- S R 2240.99 U CH6 6 10000.0
- S R 2330.99 U CH7 7 10000.0
- S R 2360.99 U CH8 8 10000.0
* VC assignments for Mk4 stations
VGEOSX SX STD VG_MK4
- X R 8405.99 U CH1 3 10000.0
- X R 8475.99 U CH2 4 10000.0
- X R 8790.99 U CH3 5 10000.0
- X R 8895.99 U CH4 6 10000.0
- S R 2220.99 U CH5 9 10000.0
- S R 2240.99 U CH6 10 10000.0
- S R 2330.99 U CH7 13 10000.0
- S R 2360.99 U CH8 14 10000.0
*****
* 16-channel sequence for geodetic VLBA experiments.
* testing modes.
VGEOSX16 SX STD SX_W16
- X R 8212.99 U CH1 1 10000.0
- X R 8252.99 U CH2 2 10000.0
- X R 8352.99 U CH3 3 10000.0
- X R 8452.99 U CH4 4 10000.0
- X R 8512.99 U CH5 5 10000.0
- X R 8732.99 U CH6 6 10000.0
- X R 8852.99 U CH7 7 10000.0
- X R 8912.99 U CH8 8 10000.0
- X R 8932.99 U CH9 9 10000.0
- S R 2220.99 U CH10 10 10000.0
- S R 2230.99 U CH11 11 10000.0
- S R 2250.99 U CH12 12 10000.0
- S R 2290.99 U CH13 13 10000.0
- S R 2305.99 U CH14 14 10000.0
- S R 2340.99 U CH15 15 10000.0
- S R 2345.99 U CH16 16 10000.0
*****
* VSOP test experiment, continuum.
VSOP-C VC STD L_STD
- L R 1649.00 U CH1 1 10000.0
- L R 1665.00 U CH2 2 10000.0
* VSOP test experiment, line.
VSOP-OHM VO STD L_STD
- L R 1607.00 U CH1 1 10000.0
- L R 1657.00 U CH2 2 10000.0
*****
* Test CDP wide-band S-X sequence. Wide X (720 MHz), wide
* S (125 MHz). Simulations with ALL stations wideband.
CDPTS-WB WB STD SX_WALL
- X R 8212.99 U CH1 1 10000.0
- X R 8252.99 U CH2 2 10000.0
- X R 8352.99 U CH3 3 10000.0
- X R 8512.99 U CH4 4 10000.0
- X R 8732.99 U CH5 5 10000.0
- X R 8852.99 U CH6 6 10000.0
- X R 8912.99 U CH7 7 10000.0
- X R 8932.99 U CH8 8 10000.0

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- S   R  2220.99 U CH9    9  10000.0
- S   R  2230.99 U CH10   10  10000.0
- S   R  2250.99 U CH11   11  10000.0
- S   R  2305.99 U CH12   12  10000.0
- S   R  2340.99 U CH13   13  10000.0
- S   R  2345.99 U CH14   14  10000.0
* 12-channel CDP wide-band sequence for Noto,
* 7 at X and 5 at S. Use with CDP wide-band.
*CDPTS-WB WB NOTO NOTO_WID
* X   R  8212.99 U CH1    1  10000.0
* X   R  8252.99 U CH2    2  10000.0
* X   R  8352.99 U CH3    3  10000.0
* X   R  8512.99 U CH4    4  10000.0
* X   R  8852.99 U CH6    6  10000.0
* X   R  8912.99 U CH7    7  10000.0
* X   R  8932.99 U CH8    8  10000.0
* S   R  2220.99 U CH9    9  10000.0
* S   R  2250.99 U CH11   11  10000.0
* S   R  2305.99 U CH12   12  10000.0
* S   R  2340.99 U CH13   13  10000.0
* S   R  2345.99 U CH14   14  10000.0
* Switched CDP wide-band sequence for VLBA.
CDPTS-WB WB SW VLBA_WID
- X   R  8212.99 U CH1    1  10000.0  1,2
- X   R  8252.99 U CH2    2  10000.0  1
- X   R  8352.99 U CH3    2  10000.0  2
- X   R  8512.99 U CH4    1  10000.0  0
- X   R  8732.99 U CH5    3  10000.0  2
- X   R  8852.99 U CH6    4  10000.0  0
- X   R  8912.99 U CH7    3  10000.0  1
- X   R  8932.99 U CH8    4  10000.0  1,2
- S   R  2220.99 U CH9    5  10000.0  1,2
- S   R  2230.99 U CH10   6  10000.0  1
- S   R  2250.99 U CH11   6  10000.0  2
- S   R  2305.99 U CH12   7  10000.0  2
- S   R  2340.99 U CH13   7  10000.0  1
- S   R  2345.99 U CH14   8  10000.0  1,2
*****
* Mode B subset of wideband.
* Subset for Mk3 Mode B
CDP-WBB SX SUBB CDP_WIDE
- X   R  8212.99 U CH1    1  10000.0
- X   R  8212.99 L CH2    1  10000.0
- X   R  8272.99 U CH3    3  10000.0
- X   R  8272.99 L CH4    3  10000.0
- X   R  8752.99 U CH5    5  10000.0
- X   R  8752.99 L CH6    5  10000.0
- X   R  8932.99 U CH7    7  10000.0
- X   R  8932.99 L CH8    7  10000.0
- S   R  2220.99 U CH9    9  10000.0
- S   R  2220.99 L CH10   9  10000.0
- S   R  2230.99 U CH11   11 10000.0
- S   R  2230.99 L CH12   11 10000.0
- S   R  2340.99 U CH13   13 10000.0
- S   R  2340.99 L CH14   13 10000.0

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CDP-WBB	SX	SUVB	VLBA_WID			
- X R	8212.99	U	CH1	1	10000.0	
- X R	8212.99	L	CH2	1	10000.0	
- X R	8272.99	U	CH3	2	10000.0	
- X R	8272.99	L	CH4	2	10000.0	
- X R	8752.99	U	CH5	3	10000.0	
- X R	8752.99	L	CH6	3	10000.0	
- X R	8932.99	U	CH7	4	10000.0	
- X R	8932.99	L	CH8	4	10000.0	
- S R	2220.99	U	CH9	5	10000.0	
- S R	2220.99	L	CH10	5	10000.0	
- S R	2230.99	U	CH11	6	10000.0	
- S R	2230.99	L	CH12	6	10000.0	
- S R	2340.99	U	CH13	7	10000.0	
- S R	2340.99	L	CH14	7	10000.0	

* X-band only for Mark IV formatter test.

CDP-M4T	WB	STD	X-M4TEST			
- X R	8196.99	U	CH1	1	10000.0	
- X R	8212.99	U	CH2	2	10000.0	
- X R	8228.99	U	CH3	3	10000.0	
- X R	8244.99	U	CH4	4	10000.0	
- X R	8260.99	U	CH5	5	10000.0	
- X R	8276.99	U	CH6	6	10000.0	
- X R	8292.99	U	CH7	7	10000.0	
- X R	8308.99	U	CH8	8	10000.0	
- X R	8324.99	U	CH9	9	10000.0	
- X R	8340.99	U	CH10	10	10000.0	
- X R	8356.99	U	CH11	11	10000.0	
- X R	8372.99	U	CH12	12	10000.0	
- X R	8388.99	U	CH13	13	10000.0	
- X R	8404.99	U	CH14	14	10000.0	

* DSN sequence for CRF experiments

DSN-SX	SX	STD	SX_DSN			
- X R	8215.24	U	CH1	1	10000.0	
- X R	8226.76	U	CH2	2	10000.0	
- X R	8237.77	U	CH3	3	10000.0	
- X R	8267.24	U	CH4	4	10000.0	
- X R	8429.24	U	CH5	5	10000.0	
- X R	8459.24	U	CH6	6	10000.0	
- X R	8537.24	U	CH7	7	10000.0	
- X R	8543.26	U	CH8	8	10000.0	
- X R	8557.77	U	CH9	9	10000.0	
- S R	2200.24	U	CH10	10	10000.0	
- S R	2206.26	U	CH11	11	10000.0	
- S R	2232.74	U	CH12	12	10000.0	
- S R	2280.23	U	CH13	13	10000.0	
- S R	2297.76	U	CH14	14	10000.0	

hdpos.cat

```

*
* HDPOS.CAT - standard headstack positions
*
* Name = name of head position set referenced in HEAD.CAT
* Pass = 1-9, A-Z. Odd-numbered passes are forward,
* even-numbered passes are reverse.
* Corresponding pass = index of sub-pass within the mode.
* Offset = offset from zero-point in microns
* MK3A refers to the Mark IIIA high density heads,
* MK3 refers to the original low density heads.
* MK3V refers to the VLBA head position pattern
*
*Name      Pass/direction(offset)
*
MK3-A
-    11(0)
MK3-B
-    11(0)    22(0)
MK3-C
-    11(0)    22(0)
MK3A-A
-    11(-350) 21(0)    31(-295) 41(55)    51(-240) 61(110)
-    71(-185) 81(165)  91(-130) A1(220)   B1(-75)   C1(275)
MK3A-B
-    11(-330) 22(-330) 31(-275) 42(-275)  51(-220) 62(-220)
-    71(-165) 82(-165) 91(-110) A2(-110)   B1(-55)   C2(-55)
-    D1(0)    E2(0)    F1(55)    G2(55)    H1(110)   I2(110)
-    J1(165)  K2(165)  L1(220)   M2(220)   N1(275)   O2(275)
MK3A-C
-    11(-330) 22(-330) 31(-275) 42(-275)  51(-220) 62(-220)
-    71(-165) 82(-165) 91(-110) A2(-110)   B1(-55)   C2(-55)
-    D1(0)    E2(0)    F1(55)    G2(55)    H1(110)   I2(110)
-    J1(165)  K2(165)  L1(220)   M2(220)   N1(275)   O2(275)
MK3A-E
-    11(-330) 22(-330) 33(-330) 44(-330)  51(-275) 62(-275)
-    73(-275) 84(-275) 91(-220) A2(-220)   B3(-220)  C4(-220)
-    D1(-165) E2(-165) F3(-165) G4(-165)   H1(-110)  I2(-110)
-    J3(-110) K4(-110) L1(-55)   M2(-55)   N3(-55)   O4(-55)
-    P1(0)    Q2(0)    R3(0)    S4(0)    T1(55)    U2(55)
-    V3(55)  W4(55)  X1(110)  Y2(110)  Z3(110)  a4(110)
-    b1(165) c2(165) d3(165) e4(165) f1(220) g2(220)
-    h3(220) i4(220) j1(275) k2(275) l3(275) m4(275)
MK3V-A
-    11(-319) 21(31)    31(-271) 41(79)    51(-223) 61(127)
-    71(-175) 81(175)  91(-127) A1(223)   B1(-79)   C1(271)
-    D1(-31)  E1(319)
MK3V-B
-    11(-319) 21(31)    32(-319) 42(31)    51(-271) 61(79)
-    72(-271) 82(79)    91(-223) A1(127)   B2(-223)  C2(127)
-    D1(-175) E1(175)  F2(-175) G2(175)   H1(-127)  I1(223)

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- J2(-127) K2(223) L1(-79) M1(271) N2(-79) O2(271)
- P1(-31) Q1(319) R2(-31) S2(319)

MK3V-C

- 11(-319) 21(31) 32(-319) 42(31) 51(-271) 61(79) 72(-271) 82(79)
- 91(-223) A1(127) B2(-223) C2(127) D1(-175) E1(175) F2(-175) G2(175)
- H1(-127) I1(223) J2(-127) K2(223) L1(-79) M1(271) N2(-79) O2(271)
- P1(-31) Q1(319) R2(-31) S2(319)

MK3V-E

- 11(-319) 21(31) 32(-319) 42(31) 53(-319) 63(31) 74(-319) 84(31)
- 91(-271) A1(79) B2(-271) C2(79) D3(-271) E3(79) F4(-271) G4(79)
- H1(-223) I1(127) J2(-223) K2(127) L3(-223) M3(127) N4(-223) O4(127)
- P1(-175) Q1(175) R2(-175) S2(175) T3(-175) U3(175) V4(-175) W4(175)
- X1(-127) Y1(223) Z2(-127) a2(223) b3(-127) c3(223) d4(-127) e4(223)
- f1(-79) g1(271) h2(-79) i2(271) j3(-79) k3(271) l4(-79) m4(271)
- n1(-31) o1(319) p2(-31) q2(319) r3(-31) s3(319) t4(-31) u4(319)

MK4-A dual headstacks

- 11(-319) 21(31) 31(-271) 41(79) 51(-223) 61(127) 71(-175)
- 111(175) 121(-127) 131(223) 141(-79) 151(271) 161(-31) 171(319)

*

loif.cat

```
*  
* LOIF.CAT - setups for IF channel and LO assignments  
*  
* 970117 nrv Add CDP_STDN for narrow-band receivers  
*  
* LOIFname = referenced from the rx.cat file  
* VC/BBC = physical VC or BBC connected to this LO freq  
* IF = the physical Mark III IF (N=normal, A=alternate)  
* or VLBA IF channel A, B, C, or D  
* Band = 1-letter band designator for this LO  
* Freq = total LO frequency (MHz)  
* SB = sideband of the LO conversion  
*  
*LOIF_name  
* BBC/VC IF Band Freq SB  
CDP_STDN  
- 1 1N X 8080 U  
- 2 1N X 8080 U  
- 3 1N X 8080 U  
- 4 1N X 8080 U  
- 5 1N X 8080 U  
- 6 1N X 8080 U  
- 7 1N X 8080 U  
- 8 1N X 8080 U  
- 9 2N S 2020 U  
- 10 2N S 2020 U  
- 11 2N S 2020 U  
- 12 2N S 2020 U  
- 13 2N S 2020 U  
- 14 2N S 2020 U  
CDP_CRF  
- 1 1N X 8080 U  
- 2 1N X 8080 U  
- 3 1N X 8080 U  
- 4 1N X 8080 U  
- 5 1N X 8080 U  
- 6 1N X 8080 U  
- 7 1N X 8080 U  
- 8 1N X 8080 U  
- 9 1N X 8080 U  
- 10 2N S 2020 U  
- 11 2N S 2020 U  
- 12 2N S 2020 U  
- 13 2N S 2020 U  
- 14 2N S 2020 U  
CDP_STD  
- 1 1N X 8080 U  
- 2 1N X 8080 U  
- 3 1N X 8080 U  
- 4 1N X 8080 U
```

-	5	1N	X	8080	U
-	6	1N	X	8080	U
-	7	1N	X	8080	U
-	8	1N	X	8080	U
-	9	2N	S	2020	U
-	10	2N	S	2020	U
-	11	2N	S	2020	U
-	12	2N	S	2020	U
-	13	2N	S	2020	U
-	14	2N	S	2020	U
YEB_STD					
-	1	A	X	7650	U
-	2	A	X	7650	U
-	3	A	X	7650	U
-	4	A	X	7650	U
-	5	A	X	7650	U
-	6	A	X	7650	U
-	7	A	X	7650	U
-	8	A	X	7650	U
-	9	B	S	1530	U
-	10	B	S	1530	U
-	11	B	S	1530	U
-	12	B	S	1530	U
-	13	B	S	1530	U
-	14	B	S	1530	U
EFL_STD					
-	1	1N	X	8110	U
-	2	1N	X	8110	U
-	3	1N	X	8110	U
-	4	1N	X	8110	U
-	5	1N	X	8110	U
-	6	1N	X	8110	U
-	7	1N	X	8110	U
-	8	1N	X	8110	U
-	9	2N	S	2100	U
-	10	2N	S	2100	U
-	11	2N	S	2100	U
-	12	2N	S	2100	U
-	13	2N	S	2100	U
-	14	2N	S	2100	U
CDP_WID8					
-	3	1N	X	8080	U
-	4	1N	X	8080	U
-	5	3N	X	8580.1	U
-	6	3N	X	8580.1	U
-	9	2N	S	2020	U
-	10	2N	S	2020	U
-	13	2N	S	2020	U
-	14	2N	S	2020	U
DSN_CRF					
-	1	1N	X	8100	U
-	2	1N	X	8100	U
-	3	1N	X	8100	U
-	4	1N	X	8100	U
-	5	1N	X	8100	U

-	6	1N	X	8100	U
-	7	1N	X	8100	U
-	8	1N	X	8100	U
-	9	1N	X	8100	U
-	10	2N	S	2000	U
-	11	2N	S	2000	U
-	12	2N	S	2000	U
-	13	2N	S	2000	U
-	14	2N	S	2000	U
DSN_STD					
-	1	1N	X	8100	U
-	2	1N	X	8100	U
-	3	1N	X	8100	U
-	4	1N	X	8100	U
-	5	1N	X	8100	U
-	6	1N	X	8100	U
-	7	1N	X	8100	U
-	8	1N	X	8100	U
-	9	2N	S	2000	U
-	10	2N	S	2000	U
-	11	2N	S	2000	U
-	12	2N	S	2000	U
-	13	2N	S	2000	U
-	14	2N	S	2000	U
CDPV_XX					
-	1	A	X	7600.1	U
-	2	A	X	7600.1	U
-	3	A	X	7600.1	U
-	4	A	X	7600.1	U
-	5	A	X	7600.1	U
-	6	A	X	7600.1	U
-	7	A	X	7600.1	U
-	8	A	X	7600.1	U
CDPV_VG					
-	1	B	X	7600.1	U
-	2	B	X	7600.1	U
-	3	C	X	8080.0	U
-	4	C	X	8080.0	U
-	5	A	S	1540.1	U
-	6	A	S	1540.1	U
-	7	A	S	1540.1	U
-	8	A	S	1540.1	U
CDPVNOTO					
-	1	A	X	7600.1	U
-	2	A	X	7600.1	U
-	3	A	X	7600.1	U
-	4	A	X	7600.1	U
-	5	A	X	7600.1	U
-	6	A	X	7600.1	U
-	7	A	X	7600.1	U
-	8	A	X	7600.1	U
-	9	D	S	1540.1	U
-	10	D	S	1540.1	U
-	11	D	S	1540.1	U
-	12	D	S	1540.1	U

-	13	D	S	1540.1	U
-	14	D	S	1540.1	U
CDPV_STD					
-	1	A	X	7600.1	U
-	2	A	X	7600.1	U
-	3	A	X	7600.1	U
-	4	A	X	7600.1	U
-	5	A	X	7600.1	U
-	6	A	X	7600.1	U
-	7	A	X	7600.1	U
-	8	A	X	7600.1	U
-	9	B	S	1540.1	U
-	10	B	S	1540.1	U
-	11	B	S	1540.1	U
-	12	B	S	1540.1	U
-	13	B	S	1540.1	U
-	14	B	S	1540.1	U
NRAO_XX					
-	1	A	X	7600	U
-	2	A	X	7600	U
-	3	A	X	7600	U
-	4	A	X	7600	U
-	5	A	X	7600	U
-	6	A	X	7600	U
-	7	A	X	7600	U
-	8	A	X	7600	U
NRAO_VG					
-	1	B	X	7600	U
-	2	B	X	7600	U
-	3	C	X	8100	U
-	4	C	X	8100	U
-	5	A	S	1500	U
-	6	A	S	1500	U
-	7	A	S	1500	U
-	8	A	S	1500	U
NRAO_STD					
-	1	A	X	7600	U
-	2	A	X	7600	U
-	3	A	X	7600	U
-	4	A	X	7600	U
-	5	A	X	7600	U
-	6	A	X	7600	U
-	7	A	X	7600	U
-	8	A	X	7600	U
-	9	B	S	1500	U
-	10	B	S	1500	U
-	11	B	S	1500	U
-	12	B	S	1500	U
-	13	B	S	1500	U
-	14	B	S	1500	U
CDP_W16					
-	1	1N	X	8080	U
-	2	1N	X	8080	U
-	3	1N	X	8080	U
-	4	1N	X	8080	U

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- 5 1N X 8080 U
- 6 3N X 8580.1 U
- 7 3N X 8580.1 U
- 8 3N X 8580.1 U
- 9 3N X 8580.1 U
- 10 2N S 2020 U
- 11 2N S 2020 U
- 12 2N S 2020 U
- 13 2N S 2020 U
- 14 2N S 2020 U
- 15 2N S 2020 U
- 16 2N S 2020 U
CDP_WIDE
- 1 1N X 8080 U
- 2 1N X 8080 U
- 3 1N X 8080 U
- 4 1N X 8080 U
- 5 3N X 8580.1 U
- 6 3N X 8580.1 U
- 7 3N X 8580.1 U
- 8 3N X 8580.1 U
- 9 2N S 2020 U
- 10 2N S 2020 U
- 11 2N S 2020 U
- 12 2N S 2020 U
- 13 2N S 2020 U
- 14 2N S 2020 U
CDPV_WIDE
- 1 A X 7600.1 U
- 2 A X 7600.1 U
- 3 A X 7600.1 U
- 4 A X 7600.1 U
- 5 C X 8080 U
- 6 C X 8080 U
- 7 C X 8080 U
- 8 C X 8080 U
- 9 B S 1540.1 U
- 10 B S 1540.1 U
- 11 B S 1540.1 U
- 12 B S 1540.1 U
- 13 B S 1540.1 U
- 14 B S 1540.1 U
CDPV_W16
- 1 A X 7600.1 U
- 2 A X 7600.1 U
- 3 A X 7600.1 U
- 4 A X 7600.1 U
- 5 A X 7600.1 U
- 6 C X 8080 U
- 7 C X 8080 U
- 8 C X 8080 U
- 9 C X 8080 U
- 10 B S 1540.1 U
- 11 B S 1540.1 U
- 12 B S 1540.1 U
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- 13 B S 1540.1 U
- 14 B S 1540.1 U
- 15 B S 1540.1 U
- 16 B S 1540.1 U

NRAO_W16

- 1 A X 7600 U
- 2 A X 7600 U
- 3 A X 7600 U
- 4 A X 7600 U
- 5 A X 7600 U
- 6 C X 8100 U
- 7 C X 8100 U
- 8 C X 8100 U
- 9 C X 8100 U
- 10 B S 1500 U
- 11 B S 1500 U
- 12 B S 1500 U
- 13 B S 1500 U
- 14 B S 1500 U
- 15 B S 1500 U
- 16 B S 1500 U

NRAO_WIDE

- 1 A X 7600 U
- 2 A X 7600 U
- 3 A X 7600 U
- 4 A X 7600 U
- 5 C X 8100 U
- 6 C X 8100 U
- 7 C X 8100 U
- 8 C X 8100 U
- 9 B S 1500 U
- 10 B S 1500 U
- 11 B S 1500 U
- 12 B S 1500 U
- 13 B S 1500 U
- 14 B S 1500 U

VLBA_XX

- 1 A X 7900 U
- 2 A X 7900 U
- 3 A X 7900 U
- 4 A X 7900 U
- 5 A X 7900 U
- 6 A X 7900 U
- 7 A X 7900 U
- 8 A X 7900 U

VLBA_79

- 1 B X 7900 U
- 2 B X 7900 U
- 3 B X 7900 U
- 4 B X 7900 U
- 5 A S 2900 L
- 6 A S 2900 L
- 7 A S 2900 L
- 8 A S 2900 L

VLBA_STD

-	1	B	X	7600	U
-	2	B	X	7600	U
-	3	B	X	7600	U
-	4	B	X	7600	U
-	5	A	S	2900	L
-	6	A	S	2900	L
-	7	A	S	2900	L
-	8	A	S	2900	L
VLBA_PN					
-	1	B	X	7600	U
-	2	D	X	7600	U
-	3	B	X	7600	U
-	4	D	X	7600	U
-	5	A	S	2900	L
-	6	C	S	2900	L
-	7	A	S	2900	L
-	8	C	S	2900	L
NRAO8_STD					
-	1	A	X	7600.1	U
-	2	A	X	7600.1	U
-	3	A	X	7600.1	U
-	4	A	X	7600.1	U
-	5	B	S	1540.1	U
-	6	B	S	1540.1	U
-	7	B	S	1540.1	U
-	8	B	S	1540.1	U
NRAO8_WIDE					
-	1	A	X	7600.1	U
-	2	A	X	7600.1	U
-	3	C	X	8080	U
-	4	C	X	8080	U
-	5	B	S	1540.1	U
-	6	B	S	1540.1	U
-	7	B	S	1540.1	U
-	8	B	S	1540.1	U
VLBA_WIDE					
-	1	B	X	7600	U
-	2	B	X	7600	U
-	3	D	X	9600	L
-	4	D	X	9600	L
-	5	A	S	2900	L
-	6	A	S	2900	L
-	7	A	S	2900	L
-	8	A	S	2900	L
VLBA_PW					
-	1	B	X	9600	L
-	2	D	X	9600	L
-	3	B	X	9600	L
-	4	D	X	9600	L
-	5	A	S	2900	L
-	6	C	S	2900	L
-	7	A	S	2900	L
-	8	C	S	2900	L
L_STD					
-	1	A	L	1100	U

- 2 A L 1100 U
*

CDP_WBX

-	1	1N	X	8080	U
-	2	1N	X	8080	U
-	3	1N	X	8080	U
-	4	1N	X	8080	U
-	5	1N	X	8080	U
-	6	1N	X	8080	U
-	7	1N	X	8080	U
-	8	1N	X	8080	U
-	9	1N	X	8080	U
-	10	1N	X	8080	U
-	11	1N	X	8080	U
-	12	1N	X	8080	U
-	13	1N	X	8080	U
-	14	1N	X	8080	U

mask.cat

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* MASK.CAT - station horizon/coordinate masks
* 930330 NRV New Kauai mask for 20-m obstruction
* 930603 nrn Changed Kauai mask per TME
* 930603 nrn Kludged extra blanks temporarily
* 930615 nrn Add Crimea mask
* 931015 nrn New Wettzell mask from DBS and AEN
* 931119 nrn New horizon masks for all VLBA sites
* 940905 nrn Ny Alesund
* 941011 nrn Change Ny Alesund name
* 941219 nrn New horizon masks for VLBA sites per DBS,
*           with higher elevations to reduce tree and
*           mountain effects.
* 950203 nrn New Ny Alesund mask, measured at station.
* 950203 nrn DSS65 mask per DBS from Tony Perea.
* 950217 nrn Corrected Ny Alesund mask.
* 950315 nrn Corrected DSS65 mask.
* 950414 nrn Corrected Noto mask, per Vincenza.
* 951003 nrn NRAO20 mask per F. Ghigo.
* 960226 nrn Change to using line segments for all.
*           Stations without graphical masks available
*           have their step functions converted to line
*           segments pending a better representation.
* 960408 nrn New VLBA station horizon line segments, per D. Shaffer,
*           which in many cases follow the 150 K line of Beaseley
*           and Metcalf.
* 960409 nrn Fairbanks mask checks OK per R. Strand.
* 960409 nrn Santiago mask based on graph of horizon
* 960410 nrn NRAO20 mask based on values from F. Ghigo.
* 960410 nrn DSS65 mask from D. Shaffer based on data from A. Perea
*           and A. Rius.
* 961212 nrn EFLSBERG mask from A. Mueskens.
*
* Horizon masks are represented as either a series of line segments
* or step functions that represent the horizon. For line segments, end
* points of the lines are entered as ordered pairs of az and el; there
* are matching pairs of az and el. For step functions, the elevation
* value is between the two azimuths between which the elevation applies;
* the mask begins with 0 and ends with 360 degrees.
* Coordinate masks are step functions with the value of the mask
* entered between two coordinates.
*
* Units are degrees for all angles. Values must be in ascending azimuth order.
* ID must match the mask ID in the antenna.cat file, and the name must
* match the site position name in the position.cat file.
* X is H for horizon mask, C for coordinate mask.
* A station can have both a horizon mask and a coordinate mask,
* the ID must be the same for both.
* Maximum 40 az and el entries, maximum 30 entries for coordinate masks.
*
*H Name      ID Az1 El1 Az2 El2 .... Azlast Ellast <<< line segments

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*H Name      ID Az1 El1 Az2 El2 .... Azlast      <<< step functions
*C Name      ID Decl HAl Dec2 HA2 .... Declast      <<< Ha/Dec coord. mask
*C Name      ID X1 Y1 X2 Y2 .... Xlast      <<< X/Y coord. mask
*
*H DSS65 65 0 7.5 2 7 11 6 32 8 39 6 48 7 55 6 230 7 250 8 303
*- 7 313 8 321 9 328 10 332 12 335 14 344 13 348 11.5 355 10 360
* DSS65 horizon per D. Shaffer 950203
*H DSS65 65 0 8 1 7 8 7 11 6 31 6 34 8 36 8 39 6 43 6 50 7 55 6
*- 225 6 255 8 300 8 307 6.5 330 10 338 14 243 14 355 11 360 8
* DSS65 horizon per D. Shaffer 960410
H DSS65 65 0 7 6 7.2 10 6 31 6 33 8 36 8 38 6 47 6 49 6 50 7 54 6
- 226 6 255 8 259 8 264 7 269 7 274 8 286 7.8 290 7 299 7.8 308.5 6
- 316 8 323 9 328 9 332 11 337 14 339 14 353 11 360 7
*H CRIMEA CR 0 15.4 5 13.0 35 12.0 40 11.0 50 10.0 55 9.0 65 8.0 70
*- 6.0 75 3.0 80 0.0 195 1.0 200 2.0 205 5.0 215 6.0 220 7.5 225
*- 8.5 245 9.5 260 10.5 275 13.0 285 15.5 290 16.8 300 18.0 305
*- 19.6 315 20.6 325 22.0 335 20.6 340 17.4 350 16.0 355 15.4 360
* Crimea mask from graph of terrain
H CRIMEA CR 0 15 10 13 40 13 80 0 180 0 230 8 270 11
- 330 22 360 15
H EFLSBERG EF F 10 13 20 15 30 18 40 19 60 18 80 15 130 15 150 12
- 160 10 190 12 250 12 270 13 290 15 340 10 350 11 360 13
*H GILCREEK AL .0 10.0 35.0 6.0 95.0 8.0 115.0 10.0 130.0
*- 12.0 195.0 8.0 220.0 5.0 295.0 7.0 310.0 10.0 330.0
*- 11.0 360.0
*H GILCREEK AL 0 17 10 14 20 10 35 8 48 6 57 5 87 6 93 8 110 10 127
*- 12 165 14 170 17 185 16 190 14 195 12 200 10 205 8.5 214 7.4 220 6.5
*- 230 5 290 7 305 10 320 11.5 344 14 350 17 360
* Gilcreek mask from graph of terrain and prelimits
H GILCREEK AL 0 17 20 10 50 5 90 5 140 10 150 12 160 12
- 180 17 205 8 225 5 290 5 340 11 360 17
* HartRAO mask is fixed
H HARTRAO HT 0 7 360 7
C HATCREEK HC -38.0 21.0 -35.0 28.4 -30.0 40.9 -25.0 51.8 -20.0
- 60.8 -15.0 68.0 -10.0 73.5 -5.0 77.1 2.0 80.0 59.0
- 76.3 65.0 72.4 70.0 68.6 75.0 64.8 80.0 61.0 85.0
* Kauai no change in mask -- this is the old format
H KAUAI KU 0 13 8 22 16
- 17 20 5 60 2 100 3 110 2 120
- 1.5 190 3 195 1.5 210 0 285 2 320
- 3 325 4 350 1.5 360
*H KAUAI KU 0 15 20 3 40 4 45
*- 5 55 4 60 2 100 3 110 2 120
*- 1.5 190 3 195 1.5 210 0 285 2 320
*- 3 325 4 350 1.5 360
*H KAUAI KU 0 1.5 5 0 20 3 40 4 45
*- 5 55 4 60 2 100 3 110 2 120
*- 1.5 190 3 195 1.5 210 0 285 2 320
*- 3 325 4 350 1.5 360
* Medicina no change
H MEDICINA ME .0 5.0 360.0 5.0
* Mojave old mask
H MOJAVE12 MO 0 9.45 35 7.1 48 8.2 61 9.1 76
- 9.3 103 9.1 119 8.2 131 7.1 145 10.0 215
- 6.9 230 8.0 244 8.6 255 8.9 279 8.6 296

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- 8.0   310   6.9   325   9.3   360
H MOJ-VLBA MX 0      9.45   35    7.1   48    8.2   61    9.1   76
- 9.3   103   9.1   119   8.2   131   7.1   145   10.0  215
- 6.9   230   8.0   244   8.6   255   8.9   279   8.6   296
- 8.0   310   6.9   325   9.3   360
*H MIZUSGSI MZ 0 5 120 6 130 5 348 6 352 5 360
* Mizusawa old mask -- needs to be changed.
*H MIZUSGSI MZ 0 3 69.4 4 112.8 5 120 6 127.4 5 139.3 4 166.1 5 180.8
*- 3 238.7 5 251.3 3 274.8 5 281.3 3 328.9 4 338.2 3 342.9 5 348.1
*- 6 353.9 3 360
*H NOTO NT .0     7.0   15.0  6.0   40.0  7.0   50.0  8.0   60.0
*- 9.0   80.0  5.0   88.0  8.0   100.0 7.0   115.0 5.0   140.0
*- 6.0   160.0 5.0   305.0 6.0   325.0 7.0   335.0 6.0   355.0
*- 7.0   360.0
*H NOTO NT .0     7 15 6 40 7 50 8 60 9 80 7 100 5 140 6 160 5
*- 305 6 325 7 335 6 355 7 360
* Noto mask from graph of terrain.
H NOTO NT 0 7 5 8 20 6 35 6 70 9 120 5 140 5 150 6 180 4
- 305 4 310 6.5 360 7
C NRAO85_3 WV -46 70 0 85 86
C NRAO85_1 WY -46 70 0 85 86
*H NYALES20 NY 0 2.5 70 1.5 120 5 150 8 160 10 170 12 180 7 185 5
*- 215 7 225 5 255 11 270 7 280 5 290 3 300 0 340 1 350 2.5 360
*H NYALES20 NY 0 4 66 2 120 5 150 6 152 7 158 8 162 9 170 10
*- 174 12 180 9 184 7 186 6 220 7 226 8 230 6 250 7 256 8 260 9
*- 262 10 266 12 274 9 278 6 284 4 294 3 306 2 358 3 360
* Ny Alesund mask from radiometric graph of horizon
H NYALES20 NY 0 2 10 4 55 4 65 2 120 2 130 5 150 5 170 12
- 190 5 220 8 230 4 260 12 280 4 310 2 360 2
C WIDE85_3 WX -46 70 0 85 86
*H PIETOWN PT .0     2.0   60.0  3.0   110.0 2.0   130.0  3.0   150.0
*- 4.0   170.0 5.0   180.0 6.0   200.0 7.0   220.0 6.0   260.0
*- 5.0   270.0 4.0   280.0 3.0   290.0 2.0   360.0
*H PIETOWN PT 0 2 60 3 85 2 165 3 180 4 250 3 265 4 275 3 280 2 360
*H PIETOWN PT 0 3 165 4 200 5 235 4 280 3 360
* VLBA horizon per C. Walker's database
*H PIETOWN PT 0 2 5 2 60 2 65 3 70 3 75 2 80 3 85 2 165 2 170 3
*- 180 3 185 4 190 4 195 3
*- 200 4 240 4 245 3 250 4 255 3 265 3 270 4 275 3 280 3 285 2 360 2
* Pie Town per DBS 3/96
H PIETOWN PT 0 3 165 3 185 4.5 270 4.5 280 3 360 3
*H SANTIA12 ST 0 10 50 12.5 100 10 130 8 145 10 210 7 230 10 255
*- 9 300 7 330 10 360
* Santiago mask from station graph
H SANTIA12 ST 0 9.5 10 8 22 9.5 45 9.5 52 11.5 71 11.5 72 12 85 12
- 122 7.5 125 8 139 5 150 8.5 159 8.5 164 9.5 182 7 192 9.5 200 9.5
- 211 5.5 230 5.5 241 9.5 250 9.5 255 8.5 290 8.5 306 6 313 6.5
- 323 5.5 327 5.5 338 9.5 350 8.5 360 9.5
*H SEST SE 0 6 10 11 13 20 13 21 6 360 6
* SEST mask converted from step function.
H SEST SE 0 6 10 6 11 13 20 13 21 6 360 6
*H FD-VLBA FV 0 5 25 3 35 2 60 6 75
*- 4 95 6 105 4 120 3 150 2 225
*- 4 245 6 285 2 300 5 325 6 335
*- 7 345 6 355 5 360

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*H FD-VLBA FV 0 5 20 3 40 2 60 7 75 4 85 6 100 2 225 4 230 2 245
*- 3 255 5 270 4 280 3 285 2 290 4 310 5 315 2 325 6 345 5 360
*H FD-VLBA FV 0 5 20 3 55 6 60 7 70 5 85 6 100
*- 5 105 4 115 3 220 4 230 3 245 5 270
*- 4 280 3 300 4 305 5 330 6 345 5 360
* VLBA horizon per C. Walker's database
*H FD-VLBA FV 0 5 5 4 10 5 15 5 20 3 55 3 60 4 65 7 70 5
*- 75 4 80 4 85 5 90 6 95 6 100 5 105 4 110 3 220 3 225 4 230 3
*- 250 3 255 4 260 5 265 5 270 4 275 4 280 3 300 3 305 4 310 5
*- 315 4 325 4 330 5 335 6 340 6 345 5 360 5
* Ft. Davis per DBS 3/96
H FD-VLBA FV 0 5 20 5 25 3 50 3 65 7.5 75 5 85 6
- 95 6 115 3 220 3 225 4.5 230 3 245 3 260 5.5 265 5.5
- 285 3 295 3 305 5 325 5 335 6.5 340 6.5 350 5 360 5
*H KP-VLBA KV 0 0 35 1 50 8 60 6 80
*- 8 85 2 95 1 105 3 110 2 130
*- 1 150 2 230 6 260 5 274 9 281
*- 3 300 2 315 1 330 0 360
*H KP-VLBA KV 0 2 50 6 65 8 80 4 90 2 180 3 220 4 260 2 360
*H KP-VLBA KV 0 3 45 5 50 6 55 7 65 8 75 9 85
*- 7 90 5 95 3 185 4 200 5 220 6 250
*- 5 265 3 360
* VLBA horizon per C. Walker's database
*H KP-VLBA KV 0 2 45 2 50 5 55 6 60 7 65 7 70 8 75 8 80 9 85 6
*- 90 3 95 2 105 2 110 3 115 3 120 2 150 2 155 3 165 3 70 2 180 2
*- 185 3 215 3 220 4 225 4 230 5 235 5 240 4 255 5 260 3 265 3
*- 270 2 360 2
* Kitt Peak per DBS 3/96
H KP-VLBA KV 0 3 40 3 50 6 65 8 82 9.5 95 3 180 3
- 205 4 220 6 245 6 270 3 360 3
*H HN-VLBA HN 0 6 30 5 130 6 145 7 155 4 200 6 230 5 350 6 360
*H HN-VLBA HN 0 8 25 7 35 6 80 7 105 9 125 11 140
*- 14 150 11 160 9 225 7 245 6 260 7 340
*- 8 360
* VLBA horizon per C. Walker's database
*H HN-VLBA HN 0 6 30 6 35 4 60 4 70 5
*- 105 5 110 3 115 4 120 4 125 5 130 4 135 6 140 5 145 7 150 7
*- 155 5 160 3 165 5 170 4 190 4 195 2 200 5 205 5 210 6 220 6 225 5
*- 230 6 235 4 240 5 315 5
*- 320 6 325 5 330 5 335 6 345 6 350 5 355 5 360 6
* Hancock per DBS 3/96
H HN-VLBA HN 0 8 15 8 40 6 70 6 80 7 125 9 140 14
- 150 14 165 9 225 9 235 7 250 6 260 7 335 7 340 8
- 360 8
*H SC-VLBA SC 0 2 50 4 60 6 70 9 105 12 115 16 130 13 140 11 160
*- 9 180 14 210 10 240 8 250 7 260 5 270 2 360
*H SC-VLBA SC 0 3 45 4 50 6 65 9 100 10 105 12 110
*- 14 115 17 135 14 145 12 155 11 160 10 175
*- 11 180 13 185 15 210 14 215 12 220 10 240
*- 8 250 7 265 6 275 3 360
* VLBA horizon per C. Walker's database
*H SC-VLBA SC 0 2 5 2 10 3 20 3 25 2 40 2 45 4 50 3 55 3 60 6 65 6
*- 70 8 75 9 80 9 85 8 95 8 100 9 105 10 110 12 115 14 120 16 125 16
*- 130 15 135 13 140 13 145 12 150 11 155 11 160 10 165 9 175 9 180 11
*- 185 13 190 14 200 14 205 15 130 13 135 12 140 10 145 10 150 9 155 8

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*- 160 10 165 9 175 9 180 11 185 13 190 14 200 14 205 15 210 13 215 12
*- 220 10 230 10 235 9 240 8 245 8 250 7 260 7 265 5 270 4 275 3
*- 280 2 360 3
* St. Croix per DBS 3/96
H SC-VLBA SC 0      3 43      3 70  9.5 95      7 120 16.5 130 16.5 145      13
- 170  9.5 185     14 205 15.5 240      9 265      7 280      3 360      3
*H LA-VLBA LA 0      1 30      2 60      3 75      4 105
*- 5      120  6      150  5      160  3      170  1      185
*- 2      215  0      240  2      265  5      320  3      345
*- 1      360
*H LA-VLBA LA 0 2 130 3 150 2 250 3 300 4 320 3 340 2 360
*H LA-VLBA LA 0 3 300 4 320 3 360
* VLBA horizon per C. Walker's database
*H LA-VLBA LA 0 2 5 2 75 2 80 3 85 2 130 2 135 3 145 3 150 2 250 2 255 3
*- 300 3 305 4 315 4 320 3 340 3 345 2 360 2
* Los Alamos per DBS 3/96
H LA-VLBA LA 0      3 300      3 305      4 315      4 320      3 360      3
*H BR-VLBA BV 0 3 40 4 70 5 120 4 130 3 160 2 190 4 240 6 330
*- 5 340 4 350 3 360
*H BR-VLBA BV 0 3 40 4 70 5 125 4 135 3 190 4 225
*- 3 235 4 245 6 320 5 335 4 350 5 360
* VLBA horizon per C. Walker's database
*H BR-VLBA BV 0 2 5 2 10 3 15 2 25 2 30 3 40 3 45 4 70 4 75 5 120 5 125 4 130 4
*- 135 3 155 3 160 2 185 2 190 3 195 4 220 4 225 3 235 3 240 4 245 4 250 5
*- 255 6 265 6 270 5 275 6 300 6 305 5 310 6 315 5 330 5 335 4 340 4 345 3
*- 350 2 360 2
* Brewster per DBS 3/96
H BR-VLBA BV 0      3 35      3 45      4 70      4 75      5 125      5 140      3
- 185      3 195      4 220      4 225      3 230      3 255      6 315      6 340      4.5
- 350      3 360      3
*H NL-VLBA NL 0 2 80 6 100 7 160 3 220 2 360
*H NL-VLBA NL 0 3 75 6 80 8 160 6 170 4 205 3 360
* VLBA horizon per C. Walker's database
*H NL-VLBA NL 0 0 2 5 2 75 2 80 3 85 6 100 6 105 8 110 7 115 7 120 6 125 7
*- 130 7 135 6 140 6 145 7 150 7 155 6 160 5 165 4 170 3 190 3 195 2 200 3
*- 220 3 225 2 360 2
* North Liberty per DBS 3/96
H NL-VLBA NL 0      3 75      3 80      6 105      8 150      8 170      4
- 200      4 205      3 360      3
*H MK-VLBA MK 0 4 10 3 20 2 120 5 150 8 160 12 170 13 190 11 200
*- 8 210 2 260 3 270 6 280 10 290 14 310 10 330 14 345 10 355 4 360
*H MK-VLBA MK 0 5 10 4 20 3 120 5 145 7 150 8 160
*- 11 165 13 190 12 200 10 205 8 210 6 215
*- 4 220 3 265 4 270 6 280 8 285 10 290
*- 12 295 14 305 12 310 11 315 10 320 11 330
*- 12 335 14 345 12 350 10 355 8 360
* VLBA horizon per C. Walker's database
*H MK-VLBA MK 0 5 5 4 10 3 15 3 20 2 120 2 125 4 130 5 135 5 140 4
*- 145 4 150 6 155 8 160 8 165 11 170 12 175 13 185 13 190 11 195 11
*- 200 9 205 7 210 5 215 3 220 2 255 2 260 3 270
*- 275 5 280 6 285 8 290 10 295 12 300 14 305 12 310 11
*- 315 9 320 10 325 11 330 10 335 12 340 14
*- 345 12 350 9 355 7 360 5
* Mauna Kea per DBS 3/96
H MK-VLBA MK 0      6 20      3 120      3 128  5.5 135  5.5 142  4.5 155      9

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- 162   11 175 13.5 185 13.5 198    11 220      3 255      3 270      4 290      11
- 300   15 315   10 325   12 330    11 340      15 360       6
*H OV-VLBA OV 0 5 10 8 20 10 30 13 45 15 65 13 75 11 80 9 90 7 100
*- 6 110 4 150 2 180 3 190 5 205 7 245 9 265 7 290 4 300 2 360
*H OV-VLBA OV 0 6 10 8 15 10 25 12 30 14 45 15 65
*- 14 70 13 75 12 80 10 90 8 100 6 110
*- 5 115 4 190 5 195 6 200 7 215 8 225
*- 7 235 8 245 9 265 8 270 7 285 6 290
*- 5 295 4 300 3 360
* VLBA horizon per C. Walker's database
*H OV-VLBA OV 0 3 5 5 10 5 15 7 20 9 25 10 30 12 35 13 40 13 45 14
*- 50 15 60 15 65 13 70 12 75 11 80 10 85 9 90 8 95 7 100 6 105 6 110 5
*- 115 4 120 3 125 3 130 4 145 4 150 3 155 2 175 2 180 3 185 3 190 4 195 5
*- 200 5 205 6 210 7 230 7 235 6 240 7 245 8 250 9 260 9 265 8 270 7
*- 280 7 285 5 290 4 295 4 300 3 305 3 310 2 350 2 355 3 360 3
* Owens Valley per DBS 3/96
H OV-VLBA OV 0 4 10 6 20 10 40 15 60 15.5 80 11 100 7
- 120 4 185 4 210 7.5 240 7.5 250 9.5 260 9.5 270 7.5 280 7.5
- 300 3.5 310 3 350 3 360 4
*H WESTFORD WF .0 5.0 15.0 6.0 25.0 8.0 60.0 5.0 75.0
*- 6.5 85.0 5.0 95.0 6.5 105.0 5.0 115.0 4.0 360.0
* Westford mask converted from step function
H WESTFORD WF 0 5 15 5 16 6 25 6 26 8 60 8 61 5 75 5 76 6.5
- 85 6.5 86 5 95 5 96 6.5 105 6.5 106 5 115 5 116 4 360 4
*H WETTZELL WZ 0 4 120 2 340 4 360
*H WETTZELL WZ 0 4.5 5 3.5 25 3 35 4.5 77 3 112 4 140 3 185 4 215
*- 2.5 225 2 230 1 290 2.5 300 4 318 5 340 4.5 355 5 360
*H WETTZELL WZ 0 4.5 25 3 35 4.5 90 3 120 4 160 3 200 4
*- 230 1 290 1 310 4 330 5 350 4.5 360 4.5
* Wettzell mask converted from step function
H WETTZELL WZ 0 4.5 25 4.5 26 3 35 3 36 4.5 90 4.5 91 3 120 3
- 121 4 160 4 161 3 200 3 201 4 230 4 231 1 310 1 311 4
- 330 4 331 5 350 5 351 4.5 360 4.5
*H NRAO20 N2 0 3 60 4 90 5 160 3 210 5 250 8 275 5 360
H NRAO20 N2 0 2.4 5.4 2.5 9.5 1.9 11.3 1.5 18.5 1.6 42.3 2.0 82.6 3.5
- 110.2 4.9 120.2 4.7 130.0 3.2 144.0 4.2 145.7 3.8 150.1 3.5 160.1 2.8
- 170.6 2.6 178.4 1.6 192.9 2.3 200.6 2.2 229.1 4.6 250.2 3.6
- 258.6 2.2 262.2 7.8 271.6 3.7 280.1 3.2 293.4 4.2 299.7 3.4
- 310.1 3.8 319.0 3.7 332.8 4.1 350.8 2.7
*
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modes.cat

```

*
* MODES.CAT - observing modes
*
*Mode name    freq.cat chan  bw   samp  bits mode/fan  barrel rec.cat
CDPSX-C-2     CDP-SX   14   2.0   4.0   1     C       none      C
CDPSX-C-4     CDP-SX   14   4.0   8.0   1     C       none      C
DSNVLBA-C-2   DSNVLBA  14   2.0   4.0   1     C       none      C
DSNSX-C-2     DSN-SX   14   2.0   4.0   1     C       none      C
CDPSXWN-C-2   CDPSXWN  14   2.0   4.0   1     C       none      C
CDPMODSX-C-2  CDPMODSX 14   2.0   4.0   1     C       none      C
CDPMODSX-C-4  CDPMODSX 14   4.0   8.0   1     C       none      C
CDPMODSX-A-4  CDPMODSX 14   4.0   8.0   1     A       none      A
CDPWB-C-2     CDPSX-WB  14   2.0   4.0   1     C       none      C
CDPWB-C-4     CDPSX-WB  14   4.0   8.0   1     C       none      C
CDPWB-TEST    CDPTS-WB  14   2.0   4.0   1     C       none      CT
CDPMODWB-C-2  CDPMODWB 14   2.0   4.0   1     C       none      C
CDPMODWB-C-4  CDPMODWB 14   4.0   8.0   1     C       none      C
CDPMODWB-B-4  CDPMODWB 14   4.0   8.0   1     B       none      B
CDPMODWB-A-4  CDPMODWB 14   4.0   8.0   1     A       none      A
NEOS-C-2      NEOS-WB   14   2.0   4.0   1     C       none      C
NEOS-A-2      NEOS-WB   14   2.0   4.0   1     A       none      A
EURSX-C-2     EUR-SX   14   2.0   4.0   1     C       none      C
CDPPD8-C-2    CDPPHDLY 8    2.0   4.0   1     C       none      C
CDPSX-V4-8    VGEOSX   8    8.0   16.0  1     1:4     none      V4-8-U-1
CDPSX-V4-8B   VGEOSX   8    8.0   16.0  1     1:4     16:1    V4-8-U-1-B
CDPSX-M2-16   VGEOSX16 16   16.0  32.0  1     1:2     none      M2-16-U-1
CDPSX-M4-16   VGEOSX16 16   16.0  32.0  1     1:4     none      M4-16-U-1
VSOPL-V4-2    VSOP-OMH  2    16.0  32.0  2     1:4     16:1    V4-2-U-2
VSOPC-V4-2    VSOP-C    2    16.0  32.0  2     1:4     16:1    V4-2-U-2
CDP-M4TEST   CDP-M4T   14   8.0   16.0  2     1:1     none      M1-14-UL-2

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position.cat

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* POSITION.CAT - sked's site position catalog
*****
* Please report errors or updates to nrw@bootes.gsfc.nasa.gov *
*****
*
* Last update:
* 940126 nrw New positions from GLB914F1
* 940204 nrw New Parkes position per TME
* 940216 nrw Updated Urumqi position from Chinese.
* 940523 nrw Updated Urumqi position from Chinese, from VLBI data.
* 940623 nrw Urumqi position from PPMS2, not much different from the
*      Chinese solution.
* 940920 nrw Entered GPS position for Ny Alesund
* 941011 nrw Change Ny Alesund name per C. Ma and M. Eubanks
* 941018 nrw New position for Ny Alesund
* 941228 nrw Position for Yebes. Temporary positio for NRAO20.
* 950104 nrw Occ. code for Yebes and NRAO20.
* 950216 nrw New position for NRAO20 from Eubanks.
* 950503 nrw Add MIAMI20 per M. Eubanks.
* 950621 nrw Preliminary MIAMI20 position per M. Eubanks.
* 960125 nrw Revise CAMBRIDG position per PC-SCHED files.
* 960220 nrw change 2-letter codes to C. Walker's list.
* 960809 nrw Change YEBES14 to YEBES for consistency.
* 961108 nrw Updated Metsahovi position from Kaj Wiik.
* 961125 nrw Fixed Matera 2-letter code to be "Ma" (not Mr).
* 961127 nrw Corrected other codes to conform to Barry Clark's list:
*      Ap=Algonquin, Ca=Cambridge, Gc=Gilcreek, Go=GOLDMARS
*      Oo=OVRO_130, Ro=MADRID64, 61=ROBLEDO32, Se=SEST, St=SANTIA12,
*      Tr=TORUN, Us=Ussuriisk, Yk=YLOW7296
* 970411 nrw Updated positions from Global solution 1069.
*      Old mobile sites without VLBI data were removed: OTAY,
*      LAJOLLA, MALIBU, SADDLEPK, JPL_MV2, JPL_MV3, GORMAN,
*      VACAVILL, WETRHOVN, TOULOUSE.
*
* Positions marked as GLB1069 are from global solution 1069, with
* X, Y, Z computed as of January 1.5, 1997.
* Occ.Code is a Goddard designator for the DIS.
* This file is ordered by WEST longitude.
*
*ID Name          X (m)        Y (m)        Z (m)    Occ.Code    Lon     Lat
Source
*
Ch CHLBOLTN   4008310.06658  -100650.75574  4943794.77179  72156301  1.44   51.15
GLB1069
Jb JODRELL2   3822842.66000  -153800.13000  5086287.22000  00000000  2.30   53.23
Other
Cn CARNUSTY   3526416.37832  -171421.09865  5294098.85187  76015301  2.78   56.48
GLB1069
Yb YEBES      4848780.32491  -261702.07078  4123035.74372  73333601  3.09   40.52
GLB1069

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Ro MADRID64	4849092.50800	-360180.50540	4115108.62490	16658501	4.25	40.43
Other						
65 DSS65	4849336.70429	-360488.78340	4114748.81871	16658501	4.25	40.43
GLB1069						
61 ROBLED32	4849245.24073	-360278.14761	4114884.56877	00000000	4.25	40.43
GLB1069						
Ce CEBRER26	4846700.47600	-370196.07100	4116905.73100	00000000	4.37	40.45
Other						
BR BREST	4228877.13421	-333104.17401	4747181.02090	76015301	4.50	48.41
GLB1069						
HF HOFN	2679650.25199	-727916.43695	5722807.21918	00000000	15.20	64.27
GLB1069						
AZ AZORES	4552174.62052	-2186664.67586	3882779.78919	00000000	25.66	37.74
GLB1069						
Ft FORTLEZA	4985370.04891	-3955020.32584	-428472.30378	72974801	38.43	-3.88
GLB1069						
It ITAPETGA	4034100.60000	-4259757.80000	-2495751.60000	00000000	46.56	-23.18
Other						
Oh OHIGGINS	1525833.00937	-2432463.66410	-5676174.51415	72454101	57.90	-63.32
GLB1069						
Sc SC-VLBA	2607848.52822	-5488069.69340	1932739.53143	76159001	64.58	17.76
GLB1069						
BE BERMUDA	2307209.46504	-4874215.89998	3394317.99929	72945301	64.67	32.36
GLB1069						
Ar ARECIBO	2440574.32000	-5546918.81000	1982434.40000	00000000	66.25	18.23
Other						
Se SEST	1838237.89336	-5258699.25068	-3100588.76895	72399501	70.73	-29.26
GLB1069						
St SANTIA12	1769693.10499	-5044504.52459	-3468434.97384	14044301	70.67	-33.15
GLB1069						
Hs HAYSTACK	1492404.75023	-4457266.51674	4296881.77130	72057401	71.49	42.62
GLB1069						
Wf WESTFORD	1492206.59964	-4458130.50737	4296015.53210	72097301	71.49	42.61
GLB1069						
Hn HN-VLBA	1446375.12632	-4447939.65155	4322306.11169	76185001	71.99	42.93
GLB1069						
Qb QUABBIN	1430960.00000	-4495734.00000	4278052.00000	00000000	72.34	42.39
Other						
Gg GGA07108	1130794.76936	-4831233.80170	3994217.03883	71085301	76.83	39.02
GLB1069						
GF GORF7102	1130686.51568	-4831353.02183	3994110.92471	71025302	76.83	39.02
GLB1069						
Md MARPOINT	1106629.30862	-4882907.14842	3938086.95585	72178101	77.23	38.37
GLB1069						
Ap ALGOPARK	918034.75611	-4346132.26769	4561971.16681	72828201	78.07	45.96
GLB1069						
G1 NRAO85_1	883555.56249	-4924490.88792	3943961.95994	00000000	79.83	38.44
GLB1069						
WV NRAO85_3	882325.57126	-4925137.98625	3943397.67664	72146901	79.84	38.43
GLB1069						
WX NRAO_13	882325.52571	-4925138.02216	3943397.64744	72146901	79.84	38.43
GLB914F1						
Gb NRAO_140	882879.89758	-4924482.30534	3944130.68657	72048001	79.84	38.44
GLB1069						

Gn NRAO20	883772.75700	-4924385.58416	3944042.48457	72484701	79.83	38.44
GLB1069						
RI RICHMOND	961258.05978	-5674090.04834	2740533.80459	72197501	80.38	25.61
GLB1069						
MI MIAMI20	961255.33780	-5674092.58842	2740533.78867	72012901	80.38	25.61
GLB1069						
CA CARROLGA	453520.58923	-5300506.77964	3507207.44408	72285301	85.11	33.57
GLB1069						
BO BLOOMIND	302384.40480	-4941699.08158	4007908.50769	72915301	86.50	39.18
GLB1069						
Nl NL-VLBA	-130872.24513	-4762317.11267	4226851.03562	76129701	91.57	41.77
GLB1069						
IA IOWA	-130899.30000	-4762309.40000	4226969.90000	00000000	91.57	41.77
Other						
LE LEONRDOK	-522231.62700	-5145676.90647	3720152.35163	72925301	95.80	35.91
GLB1069						
AU AUSTINTX	-737793.83041	-5459892.28951	3202990.46877	72715301	97.70	30.34
GLB1069						
Fd FD-VLBA	-1324009.12172	-5332181.96611	3231962.47546	76139801	103.94	30.64
GLB1069						
H7 FTD_7900	-1324227.97405	-5332063.05023	3232023.01888	79005301	103.95	30.64
GLB1069						
HR HRAS_085	-1324210.98242	-5332023.12567	3232118.34722	72167201	103.95	30.64
GLB1069						
MC MCD_7850	-1330008.17865	-5328391.56046	3236502.69653	78505301	104.02	30.68
GLB1069						
PL PLATTVIL	-1240708.20373	-4720454.38734	4094481.63257	00000000	104.73	40.18
GLB1069						
MM MILESMON	-1204439.07787	-4239211.11180	4596266.02894	70385201	105.86	46.40
GLB1069						
La LA-VLBA	-1449752.35193	-4975298.58416	3709123.92656	76119601	106.25	35.78
GLB1069						
Y1 VLA	-1601185.31697	-5041977.54058	3554875.93111	00000000	107.62	34.08
GLB1069						
PT PIETOWN	-1640953.70081	-5014816.01799	3575411.87847	72348601	108.12	34.30
GLB1069						
VE VERNAL	-1631473.36755	-4589129.00542	4106759.89976	00000000	109.57	40.33
GLB1069						
Kt KITTPEAK	-1995954.40000	-5037395.40000	3357007.30000	00000000	111.61	31.95
Other						
Kp KP-VLBA	-1995678.62097	-5037317.71077	3357328.12896	76109401	111.61	31.96
GLB1069						
FL FLAGSTAF	-1923992.76856	-4850854.64120	3658589.33826	00000000	111.63	35.21
GLB1069						
YU YUMA	-2196778.00508	-4887337.16222	3448425.26315	00000000	114.20	32.94
GLB1069						
Ye YELLOWKN	-1224124.63368	-2689530.68035	5633555.34417	72855301	114.47	62.48
GLB1069						
Yk YLOW7296	-1224399.55647	-2689273.25251	5633620.26849	72965101	114.48	62.48
GLB1069						
EL ELY	-2077236.38309	-4486712.67511	4018753.66029	00000000	114.84	39.29
GLB1069						
BL BLKBUTTE	-2306307.01065	-4787914.34324	3515736.33107	00000000	115.72	33.66
GLB1069						

OC OCOTILLO	-2335601.36061	-4832243.92010	3434392.78017	00000000	115.80	32.79
GLB1069						
DM DEADMANL	-2336819.93557	-4732587.33831	3570330.23227	00000000	116.28	34.26
GLB1069						
MP MON_PEAK	-2386289.62029	-4802346.31003	3444884.07651	00000000	116.42	32.89
GLB1069						
PF PINFLATS	-2369636.08915	-4761324.79329	3511116.21778	00000000	116.46	33.61
GLB1069						
GV GOLDECHO	-2350443.45470	-4651980.80630	3665630.61590	00000000	116.81	35.30
Other						
GP GOLDPION	-2351427.90000	-4645079.80000	3673765.00000	00000000	116.85	35.39
Other						
15 DSS15	-2353538.83728	-4641649.47727	3676669.97605	72318701	116.89	35.42
GLB1069						
MO MOJAVE12	-2356171.06577	-4646755.84695	3668470.58766	72885201	116.89	35.33
GLB1069						
MX MOJ-VLBA	-2356170.90172	-4646755.86600	3668470.51494	72885201	116.89	35.33
GLB659						
M7 MOJ_7288	-2356494.16270	-4646607.64005	3668426.61208	00000000	116.89	35.33
GLB1069						
Go GOLDMARS	-2353619.32730	-4641341.76110	3677052.16550	00000000	116.89	35.43
Other						
PB PBLOSSOM	-2464071.00200	-4649425.39957	3593905.68595	00000000	117.92	34.51
GLB1069						
J1 JPL_MV1	-2493306.21686	-4655197.47762	3565519.46750	00000000	118.17	34.21
GLB1069						
Ov OV-VLBA	-2409150.09935	-4478573.21405	3838617.39098	76165401	118.28	37.23
GLB1069						
Oo OVRO_130	-2409600.82482	-4478349.50033	3838603.20377	72077001	118.28	37.23
GLB1069						
O7 OVR_7853	-2410421.29466	-4477800.34715	3838690.29743	78535301	118.29	37.23
GLB1069						
O9 OVRO_90	-2410591.98500	-4477806.47200	3838598.35500	00000000	118.30	37.23
Other						
PV PVERDES	-2525452.94580	-4670035.36224	3522886.83904	00000000	118.40	33.74
GLB1069						
ML MAMMOTH	-2448246.79829	-4426738.10721	3875435.77192	00000000	118.95	37.64
GLB1069						
SA SANPAULA	-2554476.91152	-4608627.23535	3582138.46851	00000000	119.00	34.39
GLB1069						
Pe PENTICTN	-2058840.53704	-3621286.52965	4814420.85996	72835201	119.62	49.32
GLB1069						
Br BR-VLBA	-2112064.96240	-3705356.50312	4726813.78867	76149901	119.68	48.13
GLB1069						
VB VNDNBURG	-2678094.93731	-4525450.56595	3597410.34340	72235101	120.62	34.56
GLB1069						
QU QUINCY	-2517230.99053	-4198595.14735	4076531.23934	00000000	120.94	39.97
GLB1069						
Hc HATCREEK	-2523970.03370	-4123506.31850	4147752.56104	72186501	121.47	40.82
GLB1069						
FS FORTORDS	-2699840.43306	-4359126.82865	3781051.23379	72415304	121.77	36.59
GLB1069						

FO FORT_ORD	-2697026.95834	-4354393.06790	3788077.83376	00000000	121.77	36.67
GLB1069						
S1 SEATTLE1	-2295347.98700	-3638029.40550	4693408.55036	72295202	122.25	47.69
GLB1069						
PO PRESIDIO	-2707704.96480	-4257609.36490	3888374.22309	00000000	122.46	37.81
GLB1069						
PR PT_REYES	-2732333.28077	-4217634.72411	3914491.28727	00000000	122.94	38.10
GLB1069						
VI VICTORIA	-2341310.16922	-3539083.88567	4745768.29426	72895201	123.49	48.39
GLB1069						
WH WHTHORSE	-2215213.41671	-2209261.30052	5540291.91473	72845201	135.08	60.71
GLB1069						
YA YAKATAGA	-2529744.38914	-1942091.08183	5505028.12865	72775201	142.49	60.08
GLB1069						
SO SOURDOUGH	-2419993.63948	-1664228.73272	5643538.12545	00000000	145.48	62.66
GLB1069						
Gc GILCREEK	-2281547.29145	-1453645.07155	5756993.15313	40476601	147.50	64.98
GLB1069						
KO KODIAK	-3026940.29976	-1575911.77053	5370362.51150	72785201	152.50	57.74
GLB1069						
Mk MK-VLBA	-5464074.95251	-2495249.10738	2148296.84347	76175501	155.46	19.80
GLB1069						
HK HALEAKAL	-5465998.56887	-2404408.02785	2242228.76079	00000000	156.26	20.71
GLB1069						
Ku KAUAI	-5543846.05309	-2054563.63330	2387814.11965	13116701	159.67	22.13
GLB1069						
KK KOKEE	-5543837.61747	-2054567.84798	2387851.93900	72983001	159.67	22.13
GLB1069						
SN SNDPOINT	-3425462.01164	-1214669.09929	5223858.15574	72805201	160.48	55.35
GLB1069						
NO NOME	-2658150.60296	-693821.97103	5737236.58821	72795301	165.37	64.56
GLB1069						
MS MCMURDO	-1390317.	-372534.	-6192824.	72993101	165.00	-77.00
Map						
Kw KWAJAL26	-6143536.33766	1363997.79666	1034707.68210	49686401	192.52	9.40
GLB1069						
MR MARCUS	-5227446.47344	2551379.70176	2607604.98826	00000000	206.02	24.29
GLB1069						
Ti TIDBIN64	-4460894.38658	2682361.28749	-3674747.98550	00000000	211.02	-35.40
GLB1069						
45 DSS45	-4460935.40745	2682765.71593	-3674381.20810	16426001	211.02	-35.40
GLB1069						
Pa PARKES	-4554232.04618	2816758.99212	-3454035.88558	00000000	211.74	-33.00
GLB1069						
Ho HOBART26	-3950236.74250	2522347.56110	-4311562.54969	72425901	212.56	-42.80
GLB1069						
TJ TITIJIMA	-4489356.57899	3482989.63135	2887931.22726	00000000	217.81	27.10
GLB1069						
SI SINTOTU	-3642141.95085	2861496.55978	4370361.63648	00000000	218.16	43.53
GLB1069						
Mz MIZUSGSI	-3862411.96809	3105015.01053	4001944.82947	73144401	218.80	39.11
GLB1069						
Mn MIZNAO10	-3857236.14408	3108803.21036	4003883.04112	73243501	218.87	39.13
GLB1069						

Kb KASHIM34	-3997649.20158	3276690.75133	3724278.80527	18575801	219.34	35.96
GLB1069						
Ka KASHIMA	-3997892.25992	3276581.28126	3724118.22385	18567601	219.34	35.95
GLB1069						
TS TSUKUBA	-3957172.91067	3310237.95792	3737708.91953	00000000	219.91	36.11
GLB1069						
N6 NOBEY_6M	-3871168.55046	3428274.26689	3723697.83372	00000000	221.53	35.94
GLB1069						
No NOBEYA45	-3871168.18677	3428273.92871	3723697.62017	72444001	221.53	35.94
GLB659						
Ud USUDA64	-3855355.50082	3427427.52323	3740971.23563	00000000	221.64	36.13
GLB1069						
SJ SAGARA	-3913437.81129	3501122.79459	3608593.51216	00000000	221.82	34.68
GLB1069						
Us USSURISK	-3059725.12787	3427256.74229	4409485.41773	00000000	228.24	44.02
GLB1069						
MY MIYAZAKI	-3582768.04127	4052033.96741	3369020.55238	00000000	228.52	32.09
GLB1069						
Da DAITO	-3786460.60670	4320156.05333	2762038.87821	00000000	228.77	25.83
GLB1069						
Kn KANOZAN	-3991747.497	+3355061.838	+3661225.346	00000000	220.05	35.26
BLOKQ						
K1 KASHIM11	-3997505.697	+3276878.404	+3724240.713	00000000	219.34	35.96
BLOKQ						
Kg KOGANEI	-3941937.475	+3368150.912	+3702235.299	00000000	220.51	35.71
BLOKQ						
K3 KOGANEI3	-3942077.402	+3368332.123	+3701904.821	00000000	220.51	35.71
BLOKQ						
Mu MIURA	-3976130.031	+3377927.904	+3656753.840	00000000	220.35	35.21
BLOKQ						
SG SHANGHAI	-2847698.27249	4659872.57550	3283958.56294	72260000	238.57	31.19
GLB1069						
Sh SESCHAN25	-2831686.89842	4675733.67110	3275327.67630	72336101	238.80	31.10
GLB1069						
Ur URUMQI	228310.75003	4631922.93394	4367064.07254	73303201	272.82	43.47
GLB1069						
Sm CRIMEA	3785231.10124	2551207.42034	4439796.36738	73323401	326.02	44.40
GLB1069						
Hh HARTRAO	5085442.77838	2668263.49215	-2768697.04037	72326201	332.31	-25.89
GLB1069						
Mh METSHOVI	2890652.74831	1310295.33876	5513958.69724	76015301	335.62	60.24
GLB1069						
TN TROMSONO	2102904.05895	721602.60344	5958201.34093	76015301	341.06	69.66
GLB1069						
Tr TORUN	3638607.80000	1221781.20000	5077149.00000	00000000	341.44	53.10
Other						
Ma MATERA	4641938.78318	1393003.02605	4133325.52288	72435701	343.30	40.65
GLB1069						
Nt NOTO	4934563.12888	1321201.26699	3806484.47119	75478901	345.01	36.88
GLB1069						
KS KIRSBERG	3879830.73038	987963.33801	4948713.37785	00000000	345.71	51.21
GLB1069						
KR KARLBURG	3653204.25956	884427.58965	5135732.14174	00000000	346.39	53.98
GLB1069						

Wz	WETTZELL	4075539.89941	931735.27025	4801629.35185	72247801	347.12	49.15
GLB1069							
TL	TRY SILNO	2988029.18878	655957.07936	5578669.14383	76075202	347.62	61.42
GLB1069							
Ny	NYALES20	1202462.76928	252734.40716	6237766.01541	73313301	348.13	78.93
GLB1069							
On	ONSALA60	3370606.04502	711917.49406	5349830.72571	72137701	348.07	57.40
GLB1069							
O8	ONSALA85	3370968.18100	711464.91720	5349664.11310	72137701	348.08	57.39
Other							
Mc	MEDICINA	4461369.98765	919596.83046	4449559.17316	72308801	348.35	44.52
GLB1069							
HH	HOHENFRG	3778214.86349	698644.78233	5074053.59468	72845201	349.52	53.05
GLB1069							
GR	GRASSE	4581697.65581	556125.76063	4389351.44022	76015301	353.08	43.75
GLB1069							
Eb	EFLSBERG	4033947.50006	486990.52021	4900430.82136	72037901	353.12	50.52
GLB1069							
Wb	WESTBRKA	3828440.64000	445226.03000	5064923.08000	00000000	353.37	52.92
Other							
Dw	WESTBRK0	3828786.30000	442239.27000	5064923.08000	00000000	353.41	52.92
Other							
TO	TOULOUSE	4627950.00684	119843.68059	4372863.01344	00000000	358.52	43.56
GLB1069							
MV	MV2ONSLA	3370641.96834	711866.12626	5349796.14348	00000000	348.07	57.40
GLB1069							
HB	HOHNBERG	4213687.22930	820422.95948	4702784.24084	00000000	348.98	47.80
GLB1069							
Ca	CAMBRIDG	3920361.6	2541.5	5014284.0	00000000	359.96	52.17
Other							

rec.cat

```
*  
* REC.CAT - recording modes  
*  
* Head positions and track assignments by station  
*  
*Mode   Station    hdpos.cat      tracks.cat      barrel  
*name   name       ref.          ref.          roll  
*                                         (optional)  
A  
-      ALGOPARK  MK3A-A        A  
-      ARIES_4M   MK3A-A        A  
-      ARIES_9M   MK3A-A        A  
-      BR-VLBA   MK3V-A        A  
-      DSS15     MK3A-A        A  
-      DSS45     MK3A-A        A  
-      DSS65     MK3A-A        A  
-      CRIMEA    MK3A-A        A  
-      EFFLSBRG  MK3A-A        A  
-      FD-VLBA   MK3V-A        A  
-      GILCREEK  MK3A-A        A  
-      GOLDVENU  MK3A-A        A  
-      HARTRAO   MK3A-A        A  
-      HATCREEK  MK3A-A        A  
-      HAYSTACK  MK3A-A        A  
-      HN-VLBA   MK3V-A        A  
-      HOBART26  MK3A-A        A  
-      HRAS_085  MK3A-A        A  
-      JODRELL2  MK3A-A        A  
-      KASHIM34  MK3A-A        A  
-      KASHIMA   MK3A-A        A  
-      KAUAI     MK3A-A        A  
-      KOKEE     MK3A-A        A  
-      KP-VLBA   MK3V-A        A  
-      LA-VLBA   MK3V-A        A  
-      MARPOINT  MK3A-A        A  
-      MARCUS    MK3A-A        A  
-      MATERA    MK3A-A        A  
-      MCMURDO  MK3A-A        A  
-      MEDICINA  MK3A-A        A  
-      MIZUSGGI  MK3A-A        A  
-      MIZNAO10  MK3A-A        A  
-      MK-VLBA   MK3V-A        A  
-      MOJAVE12  MK3A-A        A  
-      FORTLEZA  MK3A-A        A  
-      NL-VLBA   MK3V-A        A  
-      NOBEYA45  MK3A-A        A  
-      NOTO     MK3A-A        A  
-      NRAO_140  MK3A-A        A  
-      NRAO85_3  MK3A-A        A  
-      NRAO85_1  MK3A-A        A
```

-	NRAO20	MK3A-A	A
-	NYALES20	MK3A-A	A
-	OHIGGINS	MK3A-A	A
-	ONSALA60	MK3A-A	A
-	ORION_5M	MK3A-A	A
-	OV-VLBA	MK3V-A	A
-	OVRO_130	MK3A-A	A
-	PIETOWN	MK3V-A	A
-	MIAMI20	MK3A-A	A
-	SANTIA12	MK3A-A	A
-	SC-VLBA	MK3V-A	A
-	SESHAN25	MK3A-A	A
-	URUMQI	MK3A-A	A
-	USSURISK	MK3A-A	A
-	VLA	MK3A-A	A
-	WESTERBK	MK3A-A	A
-	WESTFORD	MK3A-A	A
-	WETTZELL	MK3A-A	A
-	YESES	MK3A-A	A
B			
-	ALGOPARK	MK3A-B	B
-	ARIES_4M	MK3A-B	B
-	ARIES_9M	MK3A-B	B
-	BR-VLBA	MK3V-B	B
-	CRIMEA	MK3A-B	B
-	DSS15	MK3A-B	B
-	DSS45	MK3A-B	B
-	DSS65	MK3A-B	B
-	EFLSBERG	MK3A-B	B
-	FD-VLBA	MK3V-B	B
-	GILCREEK	MK3A-B	B
-	GOLDVENU	MK3A-B	B
-	HARTRAO	MK3A-B	B
-	HATCREEK	MK3A-B	B
-	HAYSTACK	MK3A-B	B
-	HN-VLBA	MK3V-B	B
-	HOBART26	MK3A-B	B
-	HRAS_085	MK3A-B	B
-	JODRELL2	MK3A-B	B
-	KASHIM34	MK3A-B	B
-	KASHIMA	MK3A-B	B
-	KAUAI	MK3A-B	B
-	KOKEE	MK3A-B	B
-	KP-VLBA	MK3V-B	B
-	LA-VLBA	MK3V-B	B
-	MARPOINT	MK3A-B	B
-	MARCUS	MK3A-B	B
-	MATERA	MK3A-B	B
-	MCMURDO	MK3A-B	B
-	MEDICINA	MK3A-B	B
-	MIZUSGSI	MK3A-B	B
-	MIZNAO10	MK3A-B	B
-	MK-VLBA	MK3V-B	B
-	MOJAVE12	MK3A-B	B
-	FORTLEZA	MK3A-B	B

-	NL-VLBA	MK3V-B	B
-	NOBEYAMA	MK3A-B	B
-	NOTO	MK3A-B	B
-	NRAO_140	MK3A-B	B
-	NRAO85_3	MK3A-B	B
-	NRAO85_1	MK3A-B	B
-	NRAO20	MK3A-B	B
-	NYALES20	MK3A-B	B
-	OHIGGINS	MK3A-B	B
-	ONSALA60	MK3A-B	B
-	ORION_5M	MK3A-B	B
-	OV-VLBA	MK3V-B	B
-	OVRO_130	MK3A-B	B
-	PIETOWN	MK3V-B	B
-	MIAMI20	MK3A-B	B
-	SANTIA12	MK3A-B	B
-	SC-VLBA	MK3V-B	B
-	SESHAN25	MK3A-B	B
-	URUMQI	MK3A-B	B
-	USSURISK	MK3A-B	B
-	VLA	MK3A-B	B
-	WESTERBK	MK3A-B	B
-	WESTFORD	MK3A-B	B
-	WETTZELL	MK3A-B	B
-	YEBES	MK3A-B	B
C			
-	ALGOPARK	MK3A-C	C
-	ARIES_4M	MK3A-C	C
-	ARIES_9M	MK3A-C	C
-	BR-VLBA	MK3V-C	C
-	CRIMEA	MK3A-C	C
-	DSS15	MK3A-C	C C
-	DSS45	MK3A-C	C
-	DSS65	MK3A-C	C
-	EFLSBERG	MK3A-C	C
-	FD-VLBA	MK3V-C	C
-	GILCREEK	MK3A-C	C
-	GOLDVENU	MK3A-C	C
-	HARTRAO	MK3A-C	C
-	HATCREEK	MK3A-C	C
-	HAYSTACK	MK3A-C	C
-	HN-VLBA	MK3V-C	C
-	HOBART26	MK3A-C	C
-	HRAS_085	MK3A-C	C
-	JODRELL2	MK3A-C	C
-	KASHIM34	MK3A-C	C
-	KASHIMA	MK3A-C	C
-	KAUAI	MK3A-C	C
-	KOKEE	MK3A-C	C
-	KP-VLBA	MK3V-C	C
-	LA-VLBA	MK3V-C	C
-	MARPOINT	MK3A-C	C
-	MARCUS	MK3A-C	C
-	MATERA	MK3A-C	C
-	MCMURDO	MK3A-C	C

-	MEDICINA	MK3A-C	C
-	MIZUSGSI	MK3A-C	C
-	MIZNAO10	MK3A-C	C
-	MK-VLBA	MK3V-C	C
-	MOJAVE12	MK3A-C	C
-	FORTLEZA	MK3A-C	C
-	NL-VLBA	MK3V-C	C
-	NOBEYAMA	MK3A-C	C
-	NOTO	MK3A-C	C
-	NRAO_140	MK3A-C	C
-	NRAO85_3	MK3A-C	C
-	NRAO85_1	MK3A-C	C
-	NRAO20	MK3A-C	C
-	NYALES20	MK3A-C	C
-	OHIGGINS	MK3A-C	C
-	ONSALA60	MK3A-C	C
-	ORION_5M	MK3A-C	C
-	OV-VLBA	MK3V-C	C
-	OVRO_130	MK3A-C	C
-	PIETOWN	MK3V-C	C
-	MIAMI20	MK3A-C	C
-	SANTIA12	MK3A-C	C
-	SC-VLBA	MK3V-C	C
-	SESHAN25	MK3A-C	C
-	USSURISK	MK3A-C	C
-	URUMQI	MK3A-C	C
-	VLA	MK3A-C	C
-	WESTERBK	MK3A-C	C
-	WESTFORD	MK3A-C	C
-	WETTZELL	MK3A-C	C
-	YESES	MK3A-C	C
D			
-	ALGOPARK	MK3A-D	D
-	ARIES_4M	MK3A-D	D
-	ARIES_9M	MK3A-D	D
-	BR-VLBA	MK3V-D	D
-	CRIMEA	MK3A-D	D
-	DSS15	MK3A-D	D
-	DSS45	MK3A-D	D
-	DSS65	MK3A-D	D
-	EFLSBERG	MK3A-D	D
-	FD-VLBA	MK3V-D	D
-	GILCREEK	MK3A-D	D
-	GOLDVENU	MK3A-D	D
-	HARTRAO	MK3A-D	D
-	HATCREEK	MK3A-D	D
-	HAYSTACK	MK3A-D	D
-	HN-VLBA	MK3V-D	D
-	HOBART26	MK3A-D	D
-	HRAS_085	MK3A-D	D
-	JODRELL2	MK3A-D	D
-	KASHIM34	MK3A-D	D
-	KASHIMA	MK3A-D	D
-	KAUAI	MK3A-D	D
-	KOKEE	MK3A-D	D

-	KP-VLBA	MK3V-D	D
-	LA-VLBA	MK3V-D	D
-	MARPOINT	MK3A-D	D
-	MARCUS	MK3A-D	D
-	MATERA	MK3A-D	D
-	MCMURDO	MK3A-D	D
-	MEDICINA	MK3A-D	D
-	MIZUSGSI	MK3A-D	D
-	MIZNAO10	MK3A-D	D
-	MK-VLBA	MK3V-D	D
-	MOJAVE12	MK3A-D	D
-	FORTLEZA	MK3A-D	D
-	NL-VLBA	MK3V-D	D
-	NOBEYAMA	MK3A-D	D
-	NOTO	MK3A-D	D
-	NRAO_140	MK3A-D	D
-	NRAO85_3	MK3A-D	D
-	NRAO85_1	MK3A-D	D
-	NRAO20	MK3A-D	D
-	NYALES20	MK3A-D	D
-	OHIGGINS	MK3A-D	D
-	ONSALA60	MK3A-D	D
-	ORION_5M	MK3A-D	D
-	OV-VLBA	MK3V-D	D
-	OVRO_130	MK3A-D	D
-	PIETOWN	MK3V-D	D
-	MIAMI20	MK3A-D	D
-	SANTIA12	MK3A-D	D
-	SC-VLBA	MK3V-D	D
-	SESHAN25	MK3A-D	D
-	URUMQI	MK3A-D	D
-	USSURISK	MK3A-D	D
-	VLA	MK3A-D	D
-	WESTERBK	MK3A-D	D
-	WESTFORD	MK3A-D	D
-	WETTZELL	MK3A-D	D
-	YEBES	MK3A-D	D
E			
-	GILCREEK	MK3V-E	E
-	KOKEE	MK3V-E	E
-	NRAO20	MK3V-E	E
-	ONSALA60	MK3A-E	E
-	MEDICINA	MK3A-E	E
-	BR-VLBA	MK3V-E	E
-	FD-VLBA	MK3V-E	E
-	HN-VLBA	MK3V-E	E
-	KP-VLBA	MK3V-E	E
-	LA-VLBA	MK3V-E	E
-	MK-VLBA	MK3V-E	E
-	NL-VLBA	MK3V-E	E
-	OV-VLBA	MK3V-E	E
-	PIETOWN	MK3V-E	E
-	SC-VLBA	MK3V-E	E

V1-8-U-2

-

-	KOKEE	MK3V-E	V1-8U2
-	NRAO20	MK3V-E	V1-8U2
-	ORION_5M	MK3V-E	V1-8U2
-	ONSALA60	MK3V-E	V1-8U2
-	MEDICINA	MK3V-E	V1-8U2
-	NYALES20	MK3V-E	V1-8U2
-	WESTFORD	MK3V-E	V1-8U2
-	BR-VLBA	MK3V-E	V1-8U2
-	FD-VLBA	MK3V-E	V1-8U2
-	HN-VLBA	MK3V-E	V1-8U2
-	KP-VLBA	MK3V-E	V1-8U2
-	LA-VLBA	MK3V-E	V1-8U2
-	MK-VLBA	MK3V-E	V1-8U2
-	NL-VLBA	MK3V-E	V1-8U2
-	OV-VLBA	MK3V-E	V1-8U2
-	PIETOWN	MK3V-E	V1-8U2
-	SC-VLBA	MK3V-E	V1-8U2
V1-8-U-1			
-	GILCREEK	MK3V-E	V1-8U1
-	KOKEE	MK3V-E	V1-8U1
-	NRAO20	MK3V-E	V1-8U1
-	ORION_5M	MK3V-E	V1-8U1
-	ONSALA60	MK3V-E	V1-8U1
-	MEDICINA	MK3V-E	V1-8U1
-	NYALES20	MK3V-E	V1-8U1
-	WESTFORD	MK3V-E	V1-8U1
-	BR-VLBA	MK3V-E	V1-8U1
-	FD-VLBA	MK3V-E	V1-8U1
-	HN-VLBA	MK3V-E	V1-8U1
-	KP-VLBA	MK3V-E	V1-8U1
-	LA-VLBA	MK3V-E	V1-8U1
-	MK-VLBA	MK3V-E	V1-8U1
-	NL-VLBA	MK3V-E	V1-8U1
-	OV-VLBA	MK3V-E	V1-8U1
-	PIETOWN	MK3V-E	V1-8U1
-	SC-VLBA	MK3V-E	V1-8U1
V2-8-U-2			
-	GILCREEK	MK3V-C	V2-8U2
-	KOKEE	MK3V-C	V2-8U2
-	NRAO20	MK3V-C	V2-8U2
-	ORION_5M	MK3V-C	V2-8U2
-	ONSALA60	MK3V-C	V2-8U2
-	MEDICINA	MK3V-C	V2-8U2
-	NYALES20	MK3V-C	V1-8U2
-	WESTFORD	MK3V-C	V2-8U2
-	BR-VLBA	MK3V-C	V2-8U2
-	FD-VLBA	MK3V-C	V2-8U2
-	HN-VLBA	MK3V-C	V2-8U2
-	KP-VLBA	MK3V-C	V2-8U2
-	LA-VLBA	MK3V-C	V2-8U2
-	MK-VLBA	MK3V-C	V2-8U2
-	NL-VLBA	MK3V-C	V2-8U2
-	OV-VLBA	MK3V-C	V2-8U2
-	PIETOWN	MK3V-C	V2-8U2
-	SC-VLBA	MK3V-C	V2-8U2

V2-8-U-1

-	GILCREEK	MK3V-C	V2-8U1
-	KOKEE	MK3V-C	V2-8U1
-	NRAO20	MK3V-C	V2-8U1
-	ORION_5M	MK3V-C	V2-8U1
-	ONSALA60	MK3V-C	V2-8U1
-	MEDICINA	MK3V-C	V2-8U1
-	NYALES20	MK3V-C	V2-8U1
-	WESTFORD	MK3V-C	V2-8U1
-	BR-VLBA	MK3V-C	V2-8U1
-	FD-VLBA	MK3V-C	V2-8U1
-	HN-VLBA	MK3V-C	V2-8U1
-	KP-VLBA	MK3V-C	V2-8U1
-	LA-VLBA	MK3V-C	V2-8U1
-	MK-VLBA	MK3V-C	V2-8U1
-	NL-VLBA	MK3V-C	V2-8U1
-	OV-VLBA	MK3V-C	V2-8U1
-	PIETOWN	MK3V-C	V2-8U1
-	SC-VLBA	MK3V-C	V2-8U1

V4-8-U-2

-	GILCREEK	MK3V-A	V4-8U2
-	KOKEE	MK3V-A	V4-8U2
-	NRAO20	MK3V-A	V4-8U2
-	ORION_5M	MK3V-A	V4-8U2
-	ONSALA60	MK3V-A	V4-8U2
-	MEDICINA	MK3V-A	V4-8U2
-	NYALES20	MK3V-A	V4-8U2
-	WESTFORD	MK3V-A	V4-8U2
-	BR-VLBA	MK3V-A	V4-8U2
-	FD-VLBA	MK3V-A	V4-8U2
-	HN-VLBA	MK3V-A	V4-8U2
-	KP-VLBA	MK3V-A	V4-8U2
-	LA-VLBA	MK3V-A	V4-8U2
-	MK-VLBA	MK3V-A	V4-8U2
-	NL-VLBA	MK3V-A	V4-8U2
-	OV-VLBA	MK3V-A	V4-8U2
-	PIETOWN	MK3V-A	V4-8U2
-	SC-VLBA	MK3V-A	V4-8U2

V4-8-U-1-B

-	GILCREEK	MK3V-A	V4-8U1	VLBA	8:1
-	KOKEE	MK3V-A	V4-8U1	VLBA	16:1
-	NRAO20	MK3V-A	V4-8U1	VLBA	16:1
-	ORION_5M	MK3V-A	V4-8U1	Mk34	
-	ONSALA60	MK3V-A	V4-8U1	Mk34	
-	MEDICINA	MK3V-A	V4-8U1	Mk34	
-	NYALES20	MK3V-A	V4-8U1	Mk34	
-	WESTFORD	MK3V-A	V4-8U1	Mk34	
-	BR-VLBA	MK3V-A	V4-8U1	VLBA	
-	FD-VLBA	MK3V-A	V4-8U1	VLBA	
-	HN-VLBA	MK3V-A	V4-8U1	VLBA	
-	KP-VLBA	MK3V-A	V4-8U1	VLBA	
-	LA-VLBA	MK3V-A	V4-8U1	VLBA	
-	MK-VLBA	MK3V-A	V4-8U1	VLBA	
-	NL-VLBA	MK3V-A	V4-8U1	VLBA	
-	OV-VLBA	MK3V-A	V4-8U1	VLBA	

-	PIETOWN	MK3V-A	V4-8U1	VLBA
-	SC-VLBA	MK3V-A	V4-8U1	VLBA
V4-8-U-1				
-	GILCREEK	MK3V-A	V4-8U1	
-	KOKEE	MK3V-A	V4-8U1	
-	NRAO20	MK3V-A	V4-8U1	
-	ORION_5M	MK3V-A	V4-8U1	
-	ONSALA60	MK3V-A	V4-8U1	
-	MEDICINA	MK3V-A	V4-8U1	
-	NYALES20	MK3V-A	V4-8U1	
-	WESTFORD	MK3V-A	V4-8U1	
-	BR-VLBA	MK3V-A	V4-8U1	
-	FD-VLBA	MK3V-A	V4-8U1	
-	HN-VLBA	MK3V-A	V4-8U1	
-	KP-VLBA	MK3V-A	V4-8U1	
-	LA-VLBA	MK3V-A	V4-8U1	
-	MK-VLBA	MK3V-A	V4-8U1	
-	NL-VLBA	MK3V-A	V4-8U1	
-	OV-VLBA	MK3V-A	V4-8U1	
-	PIETOWN	MK3V-A	V4-8U1	
-	SC-VLBA	MK3V-A	V4-8U1	
V4-2-U-2				
-	GILCREEK	MK3V-A	V4-2U2	
-	KOKEE	MK3V-A	V4-2U2	
-	NRAO20	MK3V-A	V4-2U2	
-	ORION_5M	MK3V-A	V4-2U2	
-	ONSALA60	MK3V-A	V4-2U2	
-	MEDICINA	MK3V-A	V4-2U2	
-	NYALES20	MK3V-A	V4-2U2	
-	WESTFORD	MK3V-A	V4-2U2	
-	BR-VLBA	MK3V-A	V4-2U2	
-	FD-VLBA	MK3V-A	V4-2U2	
-	HN-VLBA	MK3V-A	V4-2U2	
-	KP-VLBA	MK3V-A	V4-2U2	
-	LA-VLBA	MK3V-A	V4-2U2	
-	MK-VLBA	MK3V-A	V4-2U2	
-	NL-VLBA	MK3V-A	V4-2U2	
-	OV-VLBA	MK3V-A	V4-2U2	
-	PIETOWN	MK3V-A	V4-2U2	
-	SC-VLBA	MK3V-A	V4-2U2	
V2-16-U-1				
-	ALGOPARK	MK3A-A	V216U1	
-	ARIES_4M	MK3A-A	V216U1	
-	ARIES_9M	MK3A-A	V216U1	
-	BR-VLBA	MK3V-A	V216U1	
-	DSS15	MK3A-A	V216U1	
-	DSS45	MK3A-A	V216U1	
-	DSS65	MK3A-A	V216U1	
-	CRIMEA	MK3A-A	V216U1	
-	EFFLSBRG	MK3A-A	V216U1	
-	FD-VLBA	MK3V-A	V216U1	
-	GILCREEK	MK3A-A	V216U1	
-	GOLDVENU	MK3A-A	V216U1	
-	HARTRAO	MK3A-A	V216U1	
-	HATCREEK	MK3A-A	V216U1	

-	HAYSTACK	MK3A-A	V216U1
-	HN-VLBA	MK3V-A	V216U1
-	HOBART26	MK3A-A	V216U1
-	HRAS_085	MK3A-A	V216U1
-	JODRELL2	MK3A-A	V216U1
-	KASHIM34	MK3A-A	V216U1
-	KASHIMA	MK3A-A	V216U1
-	KAUAI	MK3A-A	V216U1
-	KOKEE	MK3A-A	V216U1
-	KP-VLBA	MK3V-A	V216U1
-	LA-VLBA	MK3V-A	V216U1
-	MARPOINT	MK3A-A	V216U1
-	MATERA	MK3A-A	V216U1
-	MCMURDO	MK3A-A	V216U1
-	MEDICINA	MK3A-A	V216U1
-	MK-VLBA	MK3V-A	V216U1
-	MOJAVE12	MK3A-A	V216U1
-	FORTLEZA	MK3A-A	V216U1
-	NL-VLBA	MK3V-A	V216U1
-	NOBEYA45	MK3A-A	V216U1
-	NOTO	MK3A-A	V216U1
-	NRAO_140	MK3A-A	V216U1
-	NRAO85_3	MK3A-A	V216U1
-	NRAO85_1	MK3A-A	V216U1
-	NRAO20	MK3A-A	V216U1
-	NYALES20	MK3A-A	V216U1
-	OHIGGINS	MK3A-A	V216U1
-	ONSALA60	MK3A-A	V216U1
-	ORION_5M	MK3A-A	V216U1
-	OV-VLBA	MK3V-A	V216U1
-	OVRO_130	MK3A-A	V216U1
-	PIETOWN	MK3V-A	V216U1
-	MIAMI20	MK3A-A	V216U1
-	SANTIA12	MK3A-A	V216U1
-	SC-VLBA	MK3V-A	V216U1
-	SESHAN25	MK3A-A	V216U1
-	URUMQI	MK3A-A	V216U1
-	USSURISK	MK3A-A	V216U1
-	VLA	MK3A-A	V216U1
-	WESTERBK	MK3A-A	V216U1
-	WESTFORD	MK3A-A	V216U1
-	WETTZELL	MK3A-A	V216U1
*			
	M4-16-U-1	Mark IV testing only!	
-	ALGOPARK	MK4-A	M416U1
-	ARIES_4M	MK4-A	M416U1
-	ARIES_9M	MK4-A	M416U1
-	DSS15	MK4-A	M416U1
-	DSS45	MK4-A	M416U1
-	DSS65	MK4-A	M416U1
-	CRIMEA	MK4-A	M416U1
-	EFFLSBRG	MK4-A	M416U1
-	GILCREEK	MK4-A	M416U1
-	GOLDVENU	MK4-A	M416U1
-	HARTRAO	MK4-A	M416U1

```

-      HATCREEK   MK4-A      M416U1
-      HAYSTACK    MK4-A      M416U1
-      HOBART26   MK4-A      M416U1
-      HRAS_085    MK4-A      M416U1
-      JODRELL2    MK4-A      M416U1
-      KASHIM34    MK4-A      M416U1
-      KASHIMA     MK4-A      M416U1
-      KAUAI       MK4-A      M416U1
-      KOKEE        MK4-A      M416U1
-      MARPOINT    MK4-A      M416U1
-      MATERA      MK4-A      M416U1
-      MCMURDO     MK4-A      M416U1
-      MEDICINA    MK4-A      M416U1
-      MOJAVE12    MK4-A      M416U1
-      FORTLEZA    MK4-A      M416U1
-      NOBEYA45    MK4-A      M416U1
-      NOTO        MK4-A      M416U1
-      NRAO_140    MK4-A      M416U1
-      NRAO85_3    MK4-A      M416U1
-      NRAO85_1    MK4-A      M416U1
-      NRAO20      MK4-A      M416U1
-      NYALES20    MK4-A      M416U1
-      OHIGGINS    MK4-A      M416U1
-      ONSALA60   MK4-A      M416U1
-      ORION_5M    MK4-A      M416U1
-      OVRO_130    MK4-A      M416U1
-      MIAMI20     MK4-A      M416U1
-      SANTIA12    MK4-A      M416U1
-      SESHAN25    MK4-A      M416U1
-      URUMQI     MK4-A      M416U1
-      USSURISK    MK4-A      M416U1
-      VLA         MK4-A      M416U1
-      WESTERBK   MK4-A      M416U1
-      WESTFORD    MK4-A      M416U1
-      WETTZELL    MK4-A      M416U1
*
```

```

M1-14-UL-2  Mark IV testing only!
-      ORION_5M    MK4-A      M114UL2
-      WESTFORD   MK4-A      M114UL2
*
```

```

M2-16-U-1  Mark IV testing only!
-      ALGOPARK   MK4-A      M416U1
-      ARIES_4M    MK4-A      M416U1
-      ARIES_9M    MK4-A      M416U1
-      DSS15       MK4-A      M416U1
-      DSS45       MK4-A      M416U1
-      DSS65       MK4-A      M416U1
-      CRIMEA      MK4-A      M416U1
-      EFFLSBRG   MK4-A      M416U1
-      GILCREEK    MK4-A      M416U1
-      GOLDVENU   MK4-A      M416U1
-      HARTRAO     MK4-A      M416U1
-      HATCREEK   MK4-A      M416U1
-      HAYSTACK    MK4-A      M416U1
-      HOBART26   MK4-A      M416U1

```

-	HRAS_085	MK4-A	M416U1
-	JODRELL2	MK4-A	M416U1
-	KASHIM34	MK4-A	M416U1
-	KASHIMA	MK4-A	M416U1
-	KAUAI	MK4-A	M416U1
-	KOKEE	MK4-A	M416U1
-	MARPOINT	MK4-A	M416U1
-	MATERA	MK4-A	M416U1
-	MCMURDO	MK4-A	M416U1
-	MEDICINA	MK4-A	M416U1
-	MOJAVE12	MK4-A	M416U1
-	FORTLEZA	MK4-A	M416U1
-	NOBEYA45	MK4-A	M416U1
-	NOTO	MK4-A	M416U1
-	NRAO_140	MK4-A	M416U1
-	NRAO85_3	MK4-A	M416U1
-	NRAO85_1	MK4-A	M416U1
-	NRAO20	MK4-A	M416U1
-	NYALES20	MK4-A	M416U1
-	OHIGGINS	MK4-A	M416U1
-	ONSALA60	MK4-A	M416U1
-	ORION_5M	MK4-A	M416U1
-	OVRO_130	MK4-A	M416U1
-	MIAMI20	MK4-A	M416U1
-	SANTIA12	MK4-A	M416U1
-	SESHAN25	MK4-A	M416U1
-	URUMQI	MK4-A	M416U1
-	USSURISK	MK4-A	M416U1
-	VLA	MK4-A	M416U1
-	WESTERBK	MK4-A	M416U1
-	WESTFORD	MK4-A	M416U1
-	WETTZELL	MK4-A	M416U1

rx.cat

```
*
```

```
* RX.CAT - station receiver setups
```

```
*
```

```
* RXname = referenced from the freq.cat file
```

```
* Stn.Name = antenna name, as in antenna.cat
```

```
* LOIFname = 8-char LO/IF setup name, found in the loif.cat file
```

```
*
```

```
* 960117 nrv Change to CDP_STD_N for stations that are still narrowband
```

```
* Now CDP_STD means a wideband receiver.
```

```
* 970331 nrv New SX_DSN for CRF experiments
```

```
*
```

```
*RXname Stn.Name LOIFname
```

```
*
```

```
SX_DSN
```

```
- DSS15 DSN_CRF
```

```
- DSS45 DSN_CRF
```

```
- MEDICINA CDP_CRF
```

```
- HARTRAO CDP_CRF
```

```
SX_STD
```

```
- ALGOPARK CDP_STD
```

```
- ARIES_4M CDP_STD
```

```
- ARIES_9M CDP_STD
```

```
- CRIMEA CDP_STDN
```

```
- DSS15 DSN_STD
```

```
- DSS45 DSN_STD
```

```
- DSS65 DSN_STD
```

```
- EFLSBERG EFL_STDN
```

```
- GILCREEK CDPV_STD
```

```
- GOLDVENU DSN_STD
```

```
- HARTRAO CDP_STD
```

```
- HAYSTACK CDP_STD
```

```
- HOBART26 CDP_STD
```

```
- KASHIM34 CDP_STD
```

```
- KASHIMA CDP_STD
```

```
- KOKEE NRAO_STD
```

```
- KWAJAL26 CDP_STDN
```

```
- MARPOINT CDP_STDN
```

```
- MARCUS CDP_STDN
```

```
- MATERA CDP_STD
```

```
- MCMURDO CDP_STD
```

```
- MEDICINA CDP_STD
```

```
- MIAMI20 CDP_STD
```

```
- MIZUSGSI CDP_STD
```

```
- MIZNAO10 CDP_STD
```

```
- FORTLEZA CDP_STD
```

```
- NRAO85_3 NRAO_STD
```

```
- NRAO20 NRAO_STD
```

```
- NYALES20 CDP_STD
```

```
- OHIGGINS CDPV_STD
```

```
- ONSALA60 CDP_STD
```

-	ORION_5M	CDP_STD
-	OVRO_130	CDP_STD
-	SANTIA12	CDP_STD
-	SESHAN25	CDPV_STD
-	SEST	CDP_STD
-	URUMQI	CDP_STDN
-	WESTFORD	CDP_STD
-	WETTZELL	CDP_STD
-	YEBES	YEB_STD
-	NOTO	CDPVNOTO
VLBA_STD		
-	BR-VLBA	VLBA_STD
-	FD-VLBA	VLBA_STD
-	HN-VLBA	VLBA_STD
-	KP-VLBA	VLBA_STD
-	LA-VLBA	VLBA_STD
-	MK-VLBA	VLBA_STD
-	NL-VLBA	VLBA_STD
-	OV-VLBA	VLBA_STD
-	PIETOWN	VLBA_STD
-	SC-VLBA	VLBA_STD
-	NRAO_140	NRAO8_STD
VLBA_PN		
-	BR-VLBA	VLBA_PN
-	FD-VLBA	VLBA_PN
-	HN-VLBA	VLBA_PN
-	KP-VLBA	VLBA_PN
-	LA-VLBA	VLBA_PN
-	MK-VLBA	VLBA_PN
-	NL-VLBA	VLBA_PN
-	OV-VLBA	VLBA_PN
-	PIETOWN	VLBA_PN
-	SC-VLBA	VLBA_PN
SX_WIDE		
-	ALGOPARK	CDP_WIDE
-	ARIES_4M	CDP_WIDE
-	ARIES_9M	CDP_WIDE
-	FORTLEZA	CDP_WIDE
-	GILCREEK	CDPV_WIDE
-	HARTRAO	CDP_WIDE
-	HAYSTACK	CDP_WIDE
-	HOBART26	CDP_WIDE
-	KOKEE	NRAO_WIDE
-	KWAJAL26	CDP_WIDE
-	MATERA	CDP_WIDE
-	MCMURDO	CDP_WIDE
-	MIAMI20	CDP_WIDE
-	MEDICINA	CDP_WIDE
-	NRAO85_3	NRAO_WIDE
-	NRAO20	NRAO_WIDE
-	NYALES20	CDP_WIDE
-	OHIGGINS	CDPV_WIDE
-	ONSALA60	CDP_WIDE
-	ORION_5M	CDP_WIDE
-	OVRO_130	CDP_WIDE

```

-      SANTIA12    CDP_WIDE
-      SEST        CDP_WIDE
-      WESTFORD    CDP_WIDE
-      WETTZELL    CDP_WIDE
SX_W16
-      ALGOPARK   CDP_W16
-      ARIES_4M    CDP_W16
-      ARIES_9M    CDP_W16
-      FORTLEZA   CDP_W16
-      GILCREEK   CDPV_W16
-      HARTRAO    CDP_W16
-      HAYSTACK   CDP_W16
-      HOBART26   CDP_W16
-      KOKEE       NRAO_W16
-      KASHIMA    CDP_W16
-      MATERA     CDP_W16
-      MIAMI20    CDP_W16
-      NRAO85_3   NRAO_W16
-      NRAO20     NRAO_W16
-      NYALES20   CDP_W16
-      OHIGGINS   CDPV_W16
-      ONSALA60   CDP_W16
-      ORION_5M   CDP_W16
-      OVRO_130   CDP_W16
-      SANTIA12   CDP_W16
-      SESHAN25   CDP_W16
-      SEST        CDP_W16
-      URUMQI    CDP_W16
-      WESTFORD   CDP_W16
-      WETTZELL   CDP_W16
VLBA_WID
-      BR-VLBA    VLBA_WIDE
-      FD-VLBA    VLBA_WIDE
-      HN-VLBA    VLBA_WIDE
-      KP-VLBA    VLBA_WIDE
-      LA-VLBA    VLBA_WIDE
-      MK-VLBA    VLBA_WIDE
-      NL-VLBA    VLBA_WIDE
-      OV-VLBA    VLBA_WIDE
-      PIETOWN   VLBA_WIDE
-      SC-VLBA    VLBA_WIDE
-      NRAO_140   NRAO8_WIDE
VLBA_PW
-      BR-VLBA    VLBA_PW
-      FD-VLBA    VLBA_PW
-      HN-VLBA    VLBA_PW
-      KP-VLBA    VLBA_PW
-      LA-VLBA    VLBA_PW
-      MK-VLBA    VLBA_PW
-      NL-VLBA    VLBA_PW
-      OV-VLBA    VLBA_PW
-      PIETOWN   VLBA_PW
-      SC-VLBA    VLBA_PW
VG_STD
-      BR-VLBA    VLBA_79

```

```

-      FD-VLBA      VLBA_79
-      HN-VLBA      VLBA_79
-      KP-VLBA      VLBA_79
-      LA-VLBA      VLBA_79
-      MK-VLBA      VLBA_79
-      NL-VLBA      VLBA_79
-      OV-VLBA      VLBA_79
-      PIETOWN     VLBA_79
-      SC-VLBA      VLBA_79
-      GILCREEK    CDPV_VG
-      KOKEE        NRAO_VG
-      NRAO20      NRAO_VG
VG_MK4
-      ONSALA60    CDP_WID8
-      ORION_5M    CDP_WID8
-      MEDICINA   CDP_WID8
-      NYALES20   CDP_WID8
-      WESTFORD   CDP_WID8
VLBA_PH
-      BR-VLBA      VLBA_STD
-      FD-VLBA      VLBA_STD
-      HN-VLBA      VLBA_STD
-      KP-VLBA      VLBA_STD
-      LA-VLBA      VLBA_STD
-      MK-VLBA      VLBA_STD
-      NL-VLBA      VLBA_STD
-      OV-VLBA      VLBA_STD
-      PIETOWN     VLBA_STD
-      SC-VLBA      VLBA_STD
L_STD
-      NOTO        L-STD
-      BR-VLBA      VLBA_L
-      FD-VLBA      VLBA_L
-      HN-VLBA      VLBA_L
-      KP-VLBA      VLBA_L
-      LA-VLBA      VLBA_L
-      MK-VLBA      VLBA_L
-      NL-VLBA      VLBA_L
-      OV-VLBA      VLBA_L
-      PIETOWN     VLBA_L
-      SC-VLBA      VLBA_L
*
M4_TEST
-      HN-VLBA      VLBA_XX
-      NL-VLBA      VLBA_XX
-      GILCREEK    CDPV_XX
-      KOKEE        NRAO_XX
-      NRAO20      NRAO_XX
SX_WALL
-      ALGOPARK    CDP_WIDE
-      CRIMEA      CDP_WIDE
-      FORTLEZA    CDP_WIDE
-      GILCREEK    CDPV_WIDE
-      HARTRAO     CDP_WIDE
-      HOBART26   CDP_WIDE

```

-	KASHIMA	CDP_STD
-	KOKEE	NRAO_WIDE
-	MATERA	CDP_WIDE
-	MEDICINA	CDP_WIDE
-	NYALES20	CDP_WIDE
-	NRAO20	NRAO_WIDE
-	NYALES20	CDP_WIDE
-	ORION_5M	CDP_WIDE
-	ONSALA60	CDP_WIDE
-	SANTIA12	CDP_WIDE
-	SESHAN25	CDP_WIDE
-	URUMQI	CDP_WIDE
-	WESTFORD	CDP_WIDE
-	WETTZELL	CDP_WIDE
-	YEBES	CDP_WIDE
X-M4TEST		
-	ORION_5M	CDP_WBX
-	WESTFORD	CDP_WBX

source.cat

```

*
* SOURCE.CAT - sked's source position catalog
* ****
* Please report errors or updates to nrv@bootes.gsfc.nasa.gov *
* ****
*
* Last update:
* 940126 NRV Added sources from BLOKQ. Updated positions from GLB923Z.
* 940127 nrv Corrected declinations and IAU names of BLOKQ sources.
* 940428 nrv Added 11 survey sources from BLOKQ of 4/25/94.
*           Added 2354-116 from BLOKQ. Updated 0454-463 from BLOKQ.
* 950927 nrv Remvoed OZ-187 as common name for 2351-154.
* 970411 nrv Source positions updated from global solution 1069

```

*IAU-Name	Common	hh mm ss.ssss	sdd	mm ss.sssss	epoch	0.0	source	
0002-478 \$		00 04 35.65553545	-47	36 19.6035041	2000.0	0.0	GLB1069	
0003+380 \$		00 05 57.17539977	38	20 15.1489837	2000.0	0.0	GLB1069	
0003-066 \$		00 06 13.89289447	-06	23 35.3355450	2000.0	0.0	GLB1069	
0007+106 IIIIZW2		00 10 31.00587311	10	58 29.5039920	2000.0	0.0	GLB1069	
0007+171 \$		00 10 33.99061161	17	24 18.7614183	2000.0	0.0	GLB1069	
0008-421 \$		00 10 52.51983144	-41	53 10.7894500	2000.0	0.0	GLB1069	
0008-264 \$		00 11 1.24677589	-26	12 33.3769269	2000.0	0.0	GLB1069	
0010+405 \$		00 13 31.13020513	40	51 37.1439379	2000.0	0.0	GLB1069	
0013-005 \$		00 16 11.08855923	-00	15 12.4451583	2000.0	0.0	GLB1069	
0014+813 \$		00 17 8.47495740	81	35 8.1363506	2000.0	0.0	GLB1069	
0016+731 \$		00 19 45.78642845	73	27 30.0174639	2000.0	0.0	GLB1069	
0019-000 4C+00.02	00 22 25.4296	+00	14 56.128		2000.0	0.0	BLOKQ	
0019+058 \$		00 22 32.44122669	06	08 4.2692915	2000.0	0.0	GLB1069	
0022-423 \$		00 24 42.98992172	-42	02 3.9511429	2000.0	0.0	GLB1069	
0024+348 OB338		00 26 41.723687	35	08 42.30939	2000.0	0.0	GLB923Z	
0025+347 0025+345	00 27 57.9599	+35	02 37.3179		2000.0	0.0	BLOKQ	
0026+346 \$		00 29 14.24247534	34	56 32.2469174	2000.0	0.0	GLB1069	
0035+413 \$		00 38 24.84362916	41	37 6.0005306	2000.0	0.0	GLB1069	
0036-216 \$		00 38 29.9	-21	20 5.		2000.0	0.0	BLOKQ
0039+230 \$		00 42 4.54516362	23	20 1.0611421	2000.0	0.0	GLB1069	
0047-579 \$		00 49 59.47307155	-57	38 27.3397319	2000.0	0.0	GLB1069	
0048-097 \$		00 50 41.31739125	-09	29 5.2102066	2000.0	0.0	GLB1069	
0056-572 \$		00 58 46.58120566	-56	59 11.4705681	2000.0	0.0	GLB1069	
0056-001 \$		00 59 5.51494039	00	06 51.6217419	2000.0	0.0	GLB1069	
0059+581 \$		01 02 45.76238297	58	24 11.1366430	2000.0	0.0	GLB1069	
0104-408 \$		01 06 45.10796350	-40	34 19.9602051	2000.0	0.0	GLB1069	
0106+013 \$		01 08 38.77107733	01	35 .3170554	2000.0	0.0	GLB1069	
0108+388 \$		01 11 37.31697133	39	06 28.1042314	2000.0	0.0	GLB1069	
0109+224 \$		01 12 5.82471055	22	44 38.7861213	2000.0	0.0	GLB1069	
0110+495 \$		01 13 27.00681579	49	48 24.0433229	2000.0	0.0	GLB1069	
0111+021 \$		01 13 43.14495379	02	22 17.3162639	2000.0	0.0	GLB1069	
0112-017 \$		01 15 17.09994897	-01	27 4.5769638	2000.0	0.0	GLB1069	
0113-118 \$		01 16 12.52196146	-11	36 15.4333141	2000.0	0.0	GLB1069	
0116+319 \$		01 19 35.00054981	32	10 50.0545885	2000.0	0.0	GLB1069	

0118-272 \$	01 20 31.66338902	-27	01	24.6525011	2000.0 0.0	GLB1069
0119+115 \$	01 21 41.59504260	11	49	50.4131870	2000.0 0.0	GLB1069
0119+041 \$	01 21 56.86169910	04	22	24.7343310	2000.0 0.0	GLB1069
0123+257 \$	01 26 42.79263296	25	59	1.3008655	2000.0 0.0	GLB1069
0125+628 \$	01 28 30.60857	+63	06	30.2144	2000.0 0.0	BLOKQ
0130-171 \$	01 32 43.4	-16	54	48.	2000.0 0.0	BLOKQ
0131-522 \$	01 33 5.76256417	-52	00	3.9464336	2000.0 0.0	GLB1069
0133+476 \$	01 36 58.59481026	47	51	29.1000704	2000.0 0.0	GLB1069
0135-247 \$	01 37 38.34639358	-24	30	53.8853735	2000.0 0.0	GLB1069
0134+329 3C48	01 37 41.29944022	33	09	35.1333268	2000.0 0.0	GLB1069
0138-097 \$	01 41 25.83217343	-09	28	43.6738861	2000.0 0.0	GLB1069
0142-278 \$	01 45 03.4	-27	33	35.	2000.0 0.0	BLOKQ
0146+056 \$	01 49 22.37088493	05	55	53.5685473	2000.0 0.0	GLB1069
0147-076 \$	01 50 2.69734709	-07	25	48.4884891	2000.0 0.0	GLB1069
0148+274 \$	01 51 27.14615004	27	44	41.7936645	2000.0 0.0	GLB1069
0149+218 \$	01 52 18.05904615	22	07	7.6997658	2000.0 0.0	GLB1069
0150-334 \$	01 53 10.12170568	-33	10	25.8617586	2000.0 0.0	GLB1069
0151+474 \$	01 54 56.28986970	47	43	26.5391546	2000.0 0.0	GLB1069
0153-410 \$	01 55 37.05939605	-40	48	42.3568122	2000.0 0.0	GLB1069
0153+744 \$	01 57 34.96495277	74	42	43.2301212	2000.0 0.0	GLB1069
0202-765 \$	02 02 13.694445	-76	20	3.06266	2000.0 0.0	GLB923Z
0159+723 \$	02 03 33.38502275	72	32	53.6669298	2000.0 0.0	GLB1069
0201+113 \$	02 03 46.65705973	11	34	45.4095839	2000.0 0.0	GLB1069
0201+088 \$	02 04 34.75927694	09	03	49.2635372	2000.0 0.0	GLB1069
0202+149 \$	02 04 50.41390418	15	14	11.0434130	2000.0 0.0	GLB1069
0202-172 \$	02 04 57.67435031	-17	01	19.8401762	2000.0 0.0	GLB1069
0202+319 \$	02 05 4.92536546	32	12	30.0953685	2000.0 0.0	GLB1069
0208-512 \$	02 10 46.20041032	-51	01	1.8918641	2000.0 0.0	GLB1069
0212+735 \$	02 17 30.81335583	73	49	32.6217976	2000.0 0.0	GLB1069
0215+015 \$	02 17 48.95474736	01	44	49.6990511	2000.0 0.0	GLB1069
0218+357 \$	02 21 05.46597	+35	56	13.7239	2000.0 0.0	BLOKQ
0218+357 0218+35A	02 21 5.466381	35	56	13.72393	2000.0 0.0	GLB923Z
0218+357 0218+35B	02 21 05.46741	+35	56	14.1322	2000.0 0.0	BLOKQ
0219+428 \$	02 22 39.61151536	43	02	7.7988956	2000.0 0.0	GLB1069
0220-349 \$	02 22 56.40163622	-34	41	28.7302279	2000.0 0.0	GLB1069
0221+067 \$	02 24 28.42819033	06	59	23.3417747	2000.0 0.0	GLB1069
0223+616 W3	02 27 04.73315	+61	52	25.4954	2000.0 0.0	BLOKQ
0224+671 4C67.05	02 28 50.05151654	67	21	3.0294653	2000.0 0.0	GLB1069
0230-790 \$	02 29 34.94662938	-78	47	45.6012342	2000.0 0.0	GLB1069
0229+131 \$	02 31 45.89405701	13	22	54.7162604	2000.0 0.0	GLB1069
0234+285 \$	02 37 52.40567767	28	48	8.9900371	2000.0 0.0	GLB1069
0235+164 \$	02 38 38.93010503	16	36	59.2746292	2000.0 0.0	GLB1069
0237-027 \$	02 39 45.47225829	-02	34	40.9143363	2000.0 0.0	GLB1069
0237+040 \$	02 39 51.26304784	04	16	21.4116401	2000.0 0.0	GLB1069
0237-233 \$	02 40 8.17449439	-23	09	15.7295460	2000.0 0.0	GLB1069
0236+610 LSI61303	02 40 31.66449907	61	13	45.5941142	2000.0 0.0	GLB1069
0238-084 NGC1052	02 41 4.79852185	-08	15	20.7518622	2000.0 0.0	GLB1069
0239+108 \$	02 42 29.17086024	11	01	.7280574	2000.0 0.0	GLB1069
0241+622 \$	02 44 57.69674161	62	28	6.5142916	2000.0 0.0	GLB1069
0248+430 \$	02 51 34.53677624	43	15	15.8288015	2000.0 0.0	GLB1069
0252-712 \$	02 52 46.156091	-71	04	35.28118	2000.0 0.0	GLB923Z
0252-549 \$	02 53 29.18042848	-54	41	51.4362986	2000.0 0.0	GLB1069
0250+178 \$	02 53 34.882011	18	05	42.51959	2000.0 0.0	GLB923Z
0256+075 \$	02 59 27.07662792	07	47	39.6430941	2000.0 0.0	GLB1069
0259+121 \$	03 02 30.54680604	12	18	56.7521314	2000.0 0.0	GLB1069

0300+470 \$	03 03 35.24222544	47 16 16.2754311	2000.0 0.0 GLB1069
0302-623 \$	03 03 50.63132463	-62 11 25.5497624	2000.0 0.0 GLB1069
0302+625 \$	03 06 42.65953865	62 43 2.0238968	2000.0 0.0 GLB1069
0304+407 ALGOL	03 08 10.14178	+40 57 20.3949	2000.0 0.0 BLOKQ
0306+102 \$	03 09 3.62349828	10 29 16.3408673	2000.0 0.0 GLB1069
0308-611 \$	03 09 56.09915785	-60 58 39.0561909	2000.0 0.0 GLB1069
0307+380 \$	03 10 49.87996664	38 14 53.8370720	2000.0 0.0 GLB1069
0312-770 \$	03 11 55.25033089	-76 51 50.8482744	2000.0 0.0 GLB1069
0309+411 \$	03 13 1.96213869	41 20 1.1833178	2000.0 0.0 GLB1069
0316+162 CTA21	03 18 57.800	+16 28 32.71	2000.0 0.0 BLOKQ
0316+413 3C84	03 19 48.16010742	41 30 42.1026825	2000.0 0.0 GLB1069
0317+188 \$	03 19 51.25673333	19 01 31.2910285	2000.0 0.0 GLB1069
0319+121 \$	03 21 53.10351029	12 21 13.9541250	2000.0 0.0 GLB1069
0326+277 0326+278	03 29 57.66941544	27 56 15.4993902	2000.0 0.0 GLB1069
0329+544 PSR0329	03 32 59.52790	+54 34 43.3539	2000.0 0.0 BLOKQ
0332-403 \$	03 34 13.65446778	-40 08 25.3978795	2000.0 0.0 GLB1069
0334-546 \$	03 35 53.92487939	-54 30 25.1143712	2000.0 0.0 GLB1069
0333+321 NRAO140	03 36 30.10761268	32 18 29.3423117	2000.0 0.0 GLB1069
0334+004 HR1099	03 36 47.36294	+00 35 19.8676	2000.0 0.0 BLOKQ
0334+014 \$	03 37 17.11	+01 37 22.4	2000.0 0.0 BLOKQ
0335-122 \$	03 37 55.55860	-12 04 12.5133	2000.0 0.0 BLOKQ
0336-017 \$	03 39 0.8	-01 33 7.0	2000.0 0.0 BLOKQ
0336-019 CTA26	03 39 30.93778325	-01 46 35.8039740	2000.0 0.0 GLB1069
0338-214 \$	03 40 35.60785639	-21 19 31.1718492	2000.0 0.0 GLB1069
0341+158 \$	03 44 23.17215775	15 59 43.3686366	2000.0 0.0 GLB1069
0342+147 \$	03 45 6.41653966	14 53 49.5582050	2000.0 0.0 GLB1069
0355-483 \$	03 57 21.91787099	-48 12 15.1606848	2000.0 0.0 GLB1069
0355+508 NRAO150	03 59 29.74726968	50 57 50.1616463	2000.0 0.0 GLB1069
0400-319 \$	04 02 21.26599606	-31 47 25.9454999	2000.0 0.0 GLB1069
0400+258 \$	04 03 5.58605255	26 00 1.5030386	2000.0 0.0 GLB1069
0402-362 \$	04 03 53.74990337	-36 05 1.9130036	2000.0 0.0 GLB1069
0403-132 \$	04 05 34.00341195	-13 08 13.6910194	2000.0 0.0 GLB1069
0405-385 \$	04 06 59.03533635	-38 26 28.0421973	2000.0 0.0 GLB1069
0405-123 \$	04 07 48.43098885	-12 11 36.6594184	2000.0 0.0 GLB1069
0405+304 0405+305	04 08 20.37755926	30 32 30.4901690	2000.0 0.0 GLB1069
0407-658 \$	04 08 20.38009327	-65 45 9.0788539	2000.0 0.0 GLB1069
0406-127 \$	04 09 5.76976726	-12 38 48.1439458	2000.0 0.0 GLB1069
0406+121 \$	04 09 22.00871093	12 17 39.8476182	2000.0 0.0 GLB1069
0411+054 \$	04 14 37.590436	+05 34 46.185080	2000.0 0.0 BLOKQ
0414-189 \$	04 16 36.54446842	-18 51 8.3402077	2000.0 0.0 GLB1069
0415+379 3C111	04 18 21.32627	+38 01 35.6764	2000.0 0.0 BLOKQ
0420-625 \$	04 20 56.1327	-62 23 39.714	2000.0 0.0 BLOKQ
0420-014 \$	04 23 15.80072618	-01 20 33.0653576	2000.0 0.0 GLB1069
0420+417 \$	04 23 56.00982219	41 50 2.7130219	2000.0 0.0 GLB1069
0422-380 \$	04 24 42.24371348	-37 56 20.7841755	2000.0 0.0 GLB1069
0422+004 \$	04 24 46.84204328	00 36 6.3291748	2000.0 0.0 GLB1069
0423+051 \$	04 26 36.60408656	05 18 19.8714694	2000.0 0.0 GLB1069
0425+048 \$	04 27 47.57052841	04 57 8.3254823	2000.0 0.0 GLB1069
0426-380 \$	04 28 40.42429118	-37 56 19.5803759	2000.0 0.0 GLB1069
0428+205 \$	04 31 03.755	+20 37 34.25	2000.0 0.0 BLOKQ
0431-512 \$	04 32 21.17821062	-51 09 25.1871977	2000.0 0.0 GLB1069
0429+415 3C119	04 32 36.503	+41 38 28.43	2000.0 0.0 BLOKQ
0430+052 3C120	04 33 11.09555818	05 21 15.6194115	2000.0 0.0 GLB1069
0430+289 \$	04 33 37.82986158	29 05 55.4770791	2000.0 0.0 GLB1069
0434-188 \$	04 37 1.48273451	-18 44 48.6132847	2000.0 0.0 GLB1069

0434+299 \$	04 38 04.914472	+30	04 32.402920	2000.0 0.0	0.0 BLOKQ
0437-454 \$	04 39 .85466818	-45	22 22.5626392	2000.0 0.0	0.0 GLB1069
0438-436 \$	04 40 17.17997741	-43	33 8.6039439	2000.0 0.0	0.0 GLB1069
0440-003 NRAO190	04 42 38.66073740	-00	17 43.4200159	2000.0 0.0	0.0 GLB1069
0440+345 \$	04 43 31.63519945	34	41 6.6640222	2000.0 0.0	0.0 GLB1069
0450-743 \$	04 48 48.548570	-74	17 31.269153	2000.0 0.0	0.0 BLOKQ
0446+112 \$	04 49 7.67113809	11	21 28.5967026	2000.0 0.0	0.0 GLB1069
0444+634 \$	04 49 23.31043580	63	32 9.4343630	2000.0 0.0	0.0 GLB1069
0448-392 \$	04 49 42.2	-39	11 10.	2000.0 0.0	0.0 BLOKQ
0454-810 \$	04 50 5.44016022	-81	01 2.2314893	2000.0 0.0	0.0 GLB1069
0451-282 \$	04 53 14.64677490	-28	07 37.3274504	2000.0 0.0	0.0 GLB1069
0454-463 \$	04 55 50.77248226	-46	15 58.6815396	2000.0 0.0	0.0 GLB1069
0454-234 \$	04 57 3.17922694	-23	24 52.0200311	2000.0 0.0	0.0 GLB1069
0459-753 HD32918	04 58 17.94552378	-75	16 37.9537867	2000.0 0.0	0.0 GLB1069
0457+024 \$	04 59 52.05065907	02	29 31.1764333	2000.0 0.0	0.0 GLB1069
0458-020 \$	05 01 12.80988793	-01	59 14.2561913	2000.0 0.0	0.0 GLB1069
0458+138 \$	05 01 45.27085270	13	56 7.2197175	2000.0 0.0	0.0 GLB1069
0459+060 \$	05 02 15.44592777	06	09 7.4942992	2000.0 0.0	0.0 GLB1069
0500+019 \$	05 03 21.19718741	02	03 4.6756033	2000.0 0.0	0.0 GLB1069
0503-608 \$	05 04 1.70130805	-60	49 52.5387507	2000.0 0.0	0.0 GLB1069
0502+049 \$	05 05 23.18474259	04	59 42.7254443	2000.0 0.0	0.0 GLB1069
0506-612 \$	05 06 43.98870958	-61	09 40.9933031	2000.0 0.0	0.0 GLB1069
0454+844 \$	05 08 42.36344666	84	32 4.5439195	2000.0 0.0	0.0 GLB1069
0506+101 \$	05 09 27.45706519	10	11 44.6009041	2000.0 0.0	0.0 GLB1069
0507+179 \$	05 10 2.36911940	18	00 41.5817712	2000.0 0.0	0.0 GLB1069
0511-220 \$	05 13 49.11431972	-21	59 16.0918929	2000.0 0.0	0.0 GLB1069
0515-674 \$	05 15 37.535223	-67	21 27.835682	2000.0 0.0	0.0 BLOKQ
0517-726 \$	05 16 37.71903445	-72	37 7.4655779	2000.0 0.0	0.0 GLB1069
0516-621 \$	05 16 44.92616329	-62	07 5.3892323	2000.0 0.0	0.0 GLB1069
0518+165 3C138	05 21 9.88604118	16	38 22.0519024	2000.0 0.0	0.0 GLB1069
0522-611 \$	05 22 34.42550423	-61	07 57.1335440	2000.0 0.0	0.0 GLB1069
0521-365 \$	05 22 57.98463516	-36	27 30.8509557	2000.0 0.0	0.0 GLB1069
0524-460 \$	05 25 31.40015299	-45	57 54.6851418	2000.0 0.0	0.0 GLB1069
0528-654 HD36705	05 28 44.784	-65	26 56.14	2000.0 0.0	0.0 BLOKQ
0530-727 \$	05 29 30.04222828	-72	45 28.5074139	2000.0 0.0	0.0 GLB1069
0528-250 \$	05 30 7.96277710	-25	03 29.8995452	2000.0 0.0	0.0 GLB1069
0539-848 HD39780	05 30 14.3392	-84	47 08.641	2000.0 0.0	0.0 BLOKQ
0528+134 \$	05 30 56.41674545	13	31 55.1495463	2000.0 0.0	0.0 GLB1069
0529+075 \$	05 32 38.99843846	07	32 43.3452166	2000.0 0.0	0.0 GLB1069
0534-611 \$	05 34 35.774635	-61	06 07.052884	2000.0 0.0	0.0 BLOKQ
0537-692 \$	05 36 57.0575	-69	13 24.662	2000.0 0.0	0.0 BLOKQ
0537-441 \$	05 38 50.36154502	-44	05 8.9390274	2000.0 0.0	0.0 GLB1069
0537-158 \$	05 39 32.010098	-15	50 30.32348	2000.0 0.0	0.0 GLB923Z
0536+145 \$	05 39 42.36600618	14	33 45.5621924	2000.0 0.0	0.0 GLB1069
0537-286 \$	05 39 54.28146220	-28	39 55.9475507	2000.0 0.0	0.0 GLB1069
0539-057 \$	05 41 38.08337531	-05	41 49.4287821	2000.0 0.0	0.0 GLB1069
0538+498 3C147	05 42 36.13792398	49	51 7.2336350	2000.0 0.0	0.0 GLB1069
0544+273 \$	05 47 34.14892007	27	21 56.8428672	2000.0 0.0	0.0 GLB1069
0552+398 \$	05 55 30.80560918	39	48 49.1650002	2000.0 0.0	0.0 GLB1069
0554+242 \$	05 57 4.71358091	24	13 55.2986346	2000.0 0.0	0.0 GLB1069
0556+238 \$	05 59 32.03314202	23	53 53.9269696	2000.0 0.0	0.0 GLB1069
0558-504 \$	05 59 46.820	-50	26 52.55	2000.0 0.0	0.0 BLOKQ
0600+177 \$	06 03 9.13025865	17	42 16.8109933	2000.0 0.0	0.0 GLB1069
0600+219 \$	06 03 51.55709018	21	59 37.6981142	2000.0 0.0	0.0 GLB1069
0602+405 \$	06 05 50.85537229	40	30 8.1029178	2000.0 0.0	0.0 GLB1069

0602+673 \$	06 07 52.67162230	67 20 55.4099297	2000.0 0.0 GLB1069
0605-085 \$	06 07 59.69924500	-08 34 49.9783741	2000.0 0.0 GLB1069
0607-157 \$	06 09 40.94954217	-15 42 40.6725954	2000.0 0.0 GLB1069
0610+260 \$	06 13 50.13914278	26 04 36.7199191	2000.0 0.0 GLB1069
0611+131 \$	06 13 57.69276739	13 06 45.4005873	2000.0 0.0 GLB1069
0609+607 \$	06 14 23.86619702	60 46 21.7555425	2000.0 0.0 GLB1069
0614-349 \$	06 16 35.980777	-34 56 16.562477	2000.0 0.0 BLOKQ
0615-365 \$	06 17 32.323989	-36 34 14.805418	2000.0 0.0 BLOKQ
0622-441 \$	06 23 31.78613462	-44 13 2.5422724	2000.0 0.0 GLB1069
0620+389 \$	06 24 19.02130674	38 56 48.7359593	2000.0 0.0 GLB1069
0615+820 \$	06 26 3.00625251	82 02 25.5678688	2000.0 0.0 GLB1069
0629-418 \$	06 31 11.99804598	-41 54 26.9463253	2000.0 0.0 GLB1069
0629+104 \$	06 32 15.329576	+10 22 02.215440	2000.0 0.0 BLOKQ
0637-752 \$	06 35 46.50791908	-75 16 16.8154113	2000.0 0.0 GLB1069
0637-337 \$	06 39 20.90472997	-33 46 .1137384	2000.0 0.0 GLB1069
0636+680 \$	06 42 4.25739830	67 58 35.6208082	2000.0 0.0 GLB1069
0642+214 3C166	06 45 24.09951432	21 21 51.2016430	2000.0 0.0 GLB1069
0642+449 \$	06 46 32.02598441	44 51 16.5901254	2000.0 0.0 GLB1069
0646-306 \$	06 48 14.09645488	-30 44 19.6598140	2000.0 0.0 GLB1069
0647-475 \$	06 48 48.451350	-47 34 27.184660	2000.0 0.0 BLOKQ
0648-165 \$	06 50 24.58184508	-16 37 39.7253822	2000.0 0.0 GLB1069
0650+371 \$	06 53 58.28277217	37 05 40.6061858	2000.0 0.0 GLB1069
0657+172 \$	07 00 1.52554086	17 09 21.7015575	2000.0 0.0 GLB1069
0700-465 \$	07 01 34.54703434	-46 34 36.6221031	2000.0 0.0 GLB1069
0707+476 \$	07 10 46.10489556	47 32 11.1426063	2000.0 0.0 GLB1069
0710+439 \$	07 13 38.16417959	43 49 17.2078501	2000.0 0.0 GLB1069
0711+356 \$	07 14 24.81757289	35 34 39.7937395	2000.0 0.0 GLB1069
0716+714 \$	07 21 53.44846121	71 20 36.3633738	2000.0 0.0 GLB1069
0720-256 VY_CAMAJ	07 22 58.29674	-25 46 02.9612	2000.0 0.0 BLOKQ
0722+145 \$	07 25 16.80774851	14 25 13.7469866	2000.0 0.0 GLB1069
0723-008 \$	07 25 50.63994047	-00 54 56.5440072	2000.0 0.0 GLB1069
0718+792 0718+793	07 26 11.73517406	79 11 31.0162010	2000.0 0.0 GLB1069
0727-365 \$	07 29 05.3935	-36 39 45.122781	2000.0 0.0 BLOKQ
0727-115 \$	07 30 19.11246873	-11 41 12.6004928	2000.0 0.0 GLB1069
0731-465 \$	07 32 44.365330	-46 40 29.04837	2000.0 0.0 GLB923Z
0733-174 \$	07 35 45.81248144	-17 35 48.5015268	2000.0 0.0 GLB1069
0735+178 \$	07 38 7.39374590	17 42 18.9982702	2000.0 0.0 GLB1069
0736-332 \$	07 38 16.94909023	-33 22 12.7778046	2000.0 0.0 GLB1069
0738-674 \$	07 38 56.49623744	-67 35 50.8257704	2000.0 0.0 GLB1069
0736+017 \$	07 39 18.03389804	01 37 4.6180421	2000.0 0.0 GLB1069
0738+313 \$	07 41 10.70330302	31 12 .2286305	2000.0 0.0 GLB1069
0738+491 \$	07 42 2.74896143	49 00 15.6091790	2000.0 0.0 GLB1069
0743-673 \$	07 43 31.61156207	-67 26 25.5464428	2000.0 0.0 GLB1069
0742+103 \$	07 45 33.05951172	10 11 12.6925778	2000.0 0.0 GLB1069
0743-006 \$	07 45 54.08231727	-00 44 17.5396044	2000.0 0.0 GLB1069
0743+259 \$	07 46 25.87418133	25 49 2.1348973	2000.0 0.0 GLB1069
0745+241 \$	07 48 36.10928164	24 00 24.1101466	2000.0 0.0 GLB1069
0744+559 DA240	07 48 36.74060	+55 48 58.7564	2000.0 0.0 BLOKQ
0748+126 \$	07 50 52.04573039	12 31 4.8282379	2000.0 0.0 GLB1069
0749+540 \$	07 53 1.38457393	53 52 59.6370927	2000.0 0.0 GLB1069
0754+100 \$	07 57 6.64295202	09 56 34.8523458	2000.0 0.0 GLB1069
0805-077 \$	08 08 15.53603559	-07 51 9.8862732	2000.0 0.0 GLB1069
0804+499 \$	08 08 39.66627538	49 50 36.5304497	2000.0 0.0 GLB1069
0805+410 \$	08 08 56.65203697	40 52 44.8888687	2000.0 0.0 GLB1069
0809-493 \$	08 11 8.80284429	-49 29 43.5077505	2000.0 0.0 GLB1069

0808+019 \$	08 11 26.70730282	01 46 52.2202967	2000.0 0.0	GLB1069
0812+367 \$	08 15 25.94483709	36 35 15.1481957	2000.0 0.0	GLB1069
0814+425 \$	08 18 15.99961635	42 22 45.4149450	2000.0 0.0	GLB1069
0818-128 \$	08 20 57.44760572	-12 58 59.1691138	2000.0 0.0	GLB1069
0820+560 \$	08 24 47.23634356	55 52 42.6693998	2000.0 0.0	GLB1069
0821+394 \$	08 24 55.48385537	39 16 41.9042612	2000.0 0.0	GLB1069
0823-500 \$	08 25 26.86888564	-50 10 38.4884857	2000.0 0.0	GLB1069
0821+621 \$	08 25 38.61228806	61 57 28.5793195	2000.0 0.0	GLB1069
0823+033 \$	08 25 50.33835445	03 09 24.5201427	2000.0 0.0	GLB1069
0823-223 \$	08 26 1.57302581	-22 30 27.2052797	2000.0 0.0	GLB1069
0826-373 \$	08 28 4.78023470	-37 31 6.2810692	2000.0 0.0	GLB1069
0827+243 \$	08 30 52.08618168	24 10 59.8204843	2000.0 0.0	GLB1069
0829+046 \$	08 31 48.87696663	04 29 39.0856364	2000.0 0.0	GLB1069
0828+493 \$	08 32 23.21670979	49 13 21.0383526	2000.0 0.0	GLB1069
0831-445 VELA-G	08 33 22.31577408	-44 41 38.7151441	2000.0 0.0	GLB1069
0831+557 \$	08 34 54.90395482	55 34 21.0710413	2000.0 0.0	GLB1069
0833-450 VELA	08 35 20.655465	-45 10 35.15321	2000.0 0.0	GLB923Z
0834-201 \$	08 36 39.21524172	-20 16 59.5038988	2000.0 0.0	GLB1069
0833+585 \$	08 37 22.40968900	58 25 1.8451031	2000.0 0.0	GLB1069
0836+710 \$	08 41 24.36526130	70 53 42.1733386	2000.0 0.0	GLB1069
0842-754 \$	08 41 27.036312	-75 40 27.86994	2000.0 0.0	GLB923Z
0839+187 \$	08 42 5.09414794	18 35 40.9901506	2000.0 0.0	GLB1069
0850+581 \$	08 54 41.99636329	57 57 29.9392845	2000.0 0.0	GLB1069
0851+202 OJ287	08 54 48.87492772	20 06 30.6408763	2000.0 0.0	GLB1069
0859-140 \$	09 02 16.83091491	-14 15 30.8756240	2000.0 0.0	GLB1069
0859+470 \$	09 03 3.99009860	46 51 4.1374443	2000.0 0.0	GLB1069
0902+343 \$	09 05 30.114	+34 07 57.1617	2000.0 0.0	BLOKQ
0906+015 \$	09 09 10.09160571	01 21 35.6177037	2000.0 0.0	GLB1069
0912+029 \$	09 14 37.91341155	02 45 59.2466100	2000.0 0.0	GLB1069
0912+297 \$	09 15 52.40161277	29 33 24.0427270	2000.0 0.0	GLB1069
0917+449 \$	09 20 58.45847383	44 41 53.9849510	2000.0 0.0	GLB1069
0919-260 \$	09 21 29.35387562	-26 18 43.3859081	2000.0 0.0	GLB1069
0917+624 \$	09 21 36.23106515	62 15 52.1803148	2000.0 0.0	GLB1069
0920-397 \$	09 22 46.41825632	-39 59 35.0677885	2000.0 0.0	GLB1069
0920+390 \$	09 23 14.45293406	38 49 39.9101994	2000.0 0.0	GLB1069
0923+392 4C39.25	09 27 3.01391312	39 02 20.8519602	2000.0 0.0	GLB1069
0925-203 \$	09 27 51.82430825	-20 34 51.2324794	2000.0 0.0	GLB1069
0936-853 \$	09 30 32.574801	-85 33 59.68806	2000.0 0.0	GLB923Z
0941-080 \$	09 43 36.945	-08 19 30.87	2000.0 0.0	BLOKQ
0943-140 NGC2992	09 45 41.95353	-14 19 37.1253	2000.0 0.0	BLOKQ
0945+408 \$	09 48 55.33817180	40 39 44.5871706	2000.0 0.0	GLB1069
0952+179 \$	09 54 56.82362082	17 43 31.2216518	2000.0 0.0	GLB1069
0951+692 SN1993J	09 55 24.77476202	69 01 13.7025533	2000.0 0.0	GLB1069
0951+693 M81	09 55 33.17305565	69 03 55.0610225	2000.0 0.0	GLB1069
0951+699 M82	09 55 50.76373	+69 40 43.4455	2000.0 0.0	BLOKQ
0953+254 OK290	09 56 49.87535355	25 15 16.0496827	2000.0 0.0	GLB1069
0954+556 4C55.17	09 57 38.1700	+55 22 58.00	2000.0 0.0	BLOKQ
0955+476 \$	09 58 19.67164517	47 25 7.8424908	2000.0 0.0	GLB1069
0955+326 \$	09 58 20.94962261	32 24 2.2092418	2000.0 0.0	GLB1069
0954+658 \$	09 58 47.24510509	65 33 54.8180524	2000.0 0.0	GLB1069
0957+561 0957+56A	10 01 20.78266	+55 53 55.6785	2000.0 0.0	BLOKQ
0957+561 0957+56B	10 01 20.87893	+55 53 49.6750	2000.0 0.0	BLOKQ
0959-443 \$	10 01 59.90756587	-44 38 .6035852	2000.0 0.0	GLB1069
1003+351 3C236	10 06 01.88852	+34 54 11.2132	2000.0 0.0	BLOKQ
1004-500 \$	10 06 14.00860201	-50 18 13.4628305	2000.0 0.0	GLB1069

1004+141 \$	10 07 41.49808419	13 56 29.6009282	2000.0 0.0	GLB1069
1011+250 \$	10 13 53.42876003	24 49 16.4407355	2000.0 0.0	GLB1069
1012+232 \$	10 14 47.06546109	23 01 16.5712314	2000.0 0.0	GLB1069
1013+615 1014+615	10 17 25.88757827	61 16 27.4967447	2000.0 0.0	GLB1069
1015-314 \$	10 18 09.2780	-31 44 14.080	2000.0 0.0	BLOKQ
1020+400 \$	10 23 11.56565991	39 48 15.3853723	2000.0 0.0	GLB1069
1021-006 \$	10 24 29.58661072	-00 52 55.4977806	2000.0 0.0	GLB1069
1022+194 \$	10 24 44.80959656	19 12 20.4154109	2000.0 0.0	GLB1069
1030+415 \$	10 33 3.70785037	41 16 6.2328697	2000.0 0.0	GLB1069
1032-199 \$	10 35 2.15529468	-20 11 34.3596874	2000.0 0.0	GLB1069
1031+567 \$	10 35 07.03989	+56 28 46.8072	2000.0 0.0	BLOKQ
1034-293 \$	10 37 16.07973799	-29 34 2.8132776	2000.0 0.0	GLB1069
1038+064 \$	10 41 17.16251356	06 10 16.9231625	2000.0 0.0	GLB1069
1038+528 1038+52A	10 41 46.78163351	52 33 28.2313477	2000.0 0.0	GLB1069
1038+528 1038+52B	10 41 48.89763352	52 33 55.6080874	2000.0 0.0	GLB1069
1040+123 3C245	10 42 44.60521268	12 03 31.2642535	2000.0 0.0	GLB1069
1039+811 \$	10 44 23.06258621	80 54 39.4429617	2000.0 0.0	GLB1069
1042+071 \$	10 44 55.91126459	06 55 38.2620244	2000.0 0.0	GLB1069
1043+066 \$	10 45 52.73323893	06 24 36.4534995	2000.0 0.0	GLB1069
1045-188 \$	10 48 6.62061190	-19 09 35.7263986	2000.0 0.0	GLB1069
1044+719 \$	10 48 27.61990138	71 43 35.9383972	2000.0 0.0	GLB1069
1048-313 \$	10 51 4.77756280	-31 38 14.3077584	2000.0 0.0	GLB1069
1049+215 \$	10 51 48.78907346	21 19 52.3139197	2000.0 0.0	GLB1069
1053+704 \$	10 56 53.61750361	70 11 45.9158878	2000.0 0.0	GLB1069
1053+815 \$	10 58 11.53535567	81 14 32.6752183	2000.0 0.0	GLB1069
1055+018 \$	10 58 29.60521448	01 33 58.8236707	2000.0 0.0	GLB1069
1057-797 \$	10 58 43.30980305	-80 03 54.1595841	2000.0 0.0	GLB1069
1101-325 \$	11 03 31.52643264	-32 51 16.6915730	2000.0 0.0	GLB1069
1101-536 \$	11 03 52.22167708	-53 57 .6965842	2000.0 0.0	GLB1069
1101+384 \$	11 04 27.31394409	38 12 31.7991200	2000.0 0.0	GLB1069
1104-445 \$	11 07 8.69414013	-44 49 7.6185406	2000.0 0.0	GLB1069
1105-680 \$	11 07 12.69456062	-68 20 50.7290935	2000.0 0.0	GLB1069
1111+149 \$	11 13 58.69509794	14 42 26.9523574	2000.0 0.0	GLB1069
1116-462 \$	11 18 26.95760178	-46 34 15.0021317	2000.0 0.0	GLB1069
1116+128 \$	11 18 57.30143915	12 34 41.7182617	2000.0 0.0	GLB1069
1123+264 \$	11 25 53.71191539	26 10 19.9786935	2000.0 0.0	GLB1069
1124-186 \$	11 27 4.39244330	-18 57 17.4416550	2000.0 0.0	GLB1069
1125+596 \$	11 28 13.34068137	59 25 14.7991676	2000.0 0.0	GLB1069
1127-145 \$	11 30 7.05255339	-14 49 27.3882188	2000.0 0.0	GLB1069
1128+385 \$	11 30 53.28261018	38 15 18.5470571	2000.0 0.0	GLB1069
1129-580 \$	11 31 43.28764173	-58 18 53.4424969	2000.0 0.0	GLB1069
1130+009 \$	11 33 20.05580423	00 40 52.8371962	2000.0 0.0	GLB1069
1142+198 NGC3862	11 45 5.00906511	19 36 22.7415959	2000.0 0.0	GLB1069
1143-245 \$	11 46 8.10339764	-24 47 32.8968638	2000.0 0.0	GLB1069
1144+402 \$	11 46 58.29790955	39 58 34.3045271	2000.0 0.0	GLB1069
1144-379 \$	11 47 1.37070387	-38 12 11.0234006	2000.0 0.0	GLB1069
1145-071 \$	11 47 51.55404156	-07 24 41.1411053	2000.0 0.0	GLB1069
1147+245 \$	11 50 19.21219199	24 17 53.8348885	2000.0 0.0	GLB1069
1148-001 \$	11 50 43.87079812	-00 23 54.2049856	2000.0 0.0	GLB1069
1148-671 \$	11 51 13.42661233	-67 28 11.0940724	2000.0 0.0	GLB1069
1150+812 \$	11 53 12.49915932	80 58 29.1545034	2000.0 0.0	GLB1069
1150+497 \$	11 53 24.46663985	49 31 8.8300266	2000.0 0.0	GLB1069
1155+251 \$	11 58 25.78750366	24 50 17.9636180	2000.0 0.0	GLB1069
1156-094 \$	11 59 12.71177814	-09 40 52.0479429	2000.0 0.0	GLB1069
1109+357 NGC3569	11 12 08.11795	+35 27 06.9738	2000.0 0.0	BLOKQ

1117+146 \$	11 20 27.80722799	14 20 54.9947601	2000.0 0.0 GLB1069
1128-047 \$	11 31 30.51672933	-05 00 19.6573226	2000.0 0.0 GLB1069
1141+545 1144+542	11 44 04.58	+54 13 22.8	2000.0 0.0 BLOKQ
1146+596 NGC3894	11 48 50.38934	+59 24 56.3276	2000.0 0.0 BLOKQ
1155+557 NGC3998	11 57 56.16448	+55 27 12.5464	2000.0 0.0 BLOKQ
1156+295 \$	11 59 31.83391559	29 14 43.8269095	2000.0 0.0 GLB1069
1206-399 \$	12 09 35.24345962	-40 16 13.0988234	2000.0 0.0 GLB1069
1213-172 \$	12 15 46.75177259	-17 31 45.4029515	2000.0 0.0 GLB1069
1213+350 \$	12 15 55.60104750	34 48 15.2205668	2000.0 0.0 GLB1069
1215+303 \$	12 17 52.08198349	30 07 .6362629	2000.0 0.0 GLB1069
1215-457 \$	12 18 6.25240638	-46 00 29.0107091	2000.0 0.0 GLB1069
1216+487 \$	12 19 6.41473758	48 29 56.1647935	2000.0 0.0 GLB1069
1217+295 NGC4278	12 20 6.81524084	29 16 50.8672894	2000.0 0.0 GLB1069
1219+285 \$	12 21 31.69053977	28 13 58.5003585	2000.0 0.0 GLB1069
1219+044 \$	12 22 22.54961892	04 13 15.7762588	2000.0 0.0 GLB1069
1221+809 \$	12 23 40.49376084	80 40 4.3403981	2000.0 0.0 GLB1069
1222+037 \$	12 24 52.42192032	03 30 50.2931673	2000.0 0.0 GLB1069
1221-829 \$	12 24 54.384558	-83 13 10.10015	2000.0 0.0 GLB923Z
1226+373 \$	12 28 47.42367897	37 06 12.0956900	2000.0 0.0 GLB1069
1226+023 3C273B	12 29 6.69973194	02 03 8.5981848	2000.0 0.0 GLB1069
1228+126 3C274	12 30 49.42338264	12 23 28.0438680	2000.0 0.0 GLB1069
1233+128 NGC4552	12 35 39.88487	+12 33 21.4094	2000.0 0.0 BLOKQ
1234-504 \$	12 37 15.23907969	-50 46 23.1722820	2000.0 0.0 GLB1069
1235-570 1234-567	12 37 50.1627	-57 16 29.6389	2000.0 0.0 BLOKQ
1236+077 \$	12 39 24.58831530	07 30 17.1890734	2000.0 0.0 GLB1069
1237-101 \$	12 39 43.06148067	-10 23 28.6926510	2000.0 0.0 GLB1069
1236-684 \$	12 39 46.65145309	-68 45 30.8924581	2000.0 0.0 GLB1069
1237-113 M104	12 39 59.43186452	-11 37 22.9957777	2000.0 0.0 GLB1069
1239+376 \$	12 42 9.81234919	37 20 5.6929384	2000.0 0.0 GLB1069
1240+381 \$	12 42 51.36908506	37 51 .0250187	2000.0 0.0 GLB1069
1243-072 \$	12 46 4.23211279	-07 30 46.5744021	2000.0 0.0 GLB1069
1244-255 \$	12 46 46.80203984	-25 47 49.2887845	2000.0 0.0 GLB1069
1245-197 \$	12 48 23.8999	-19 59 18.657	2000.0 0.0 BLOKQ
1251-407 \$	12 53 59.53360011	-40 59 30.6878243	2000.0 0.0 GLB1069
1252+119 \$	12 54 38.25558168	11 41 5.8948280	2000.0 0.0 GLB1069
1251-713 \$	12 54 59.92143906	-71 38 18.4365705	2000.0 0.0 GLB1069
1253-055 3C279	12 56 11.16654206	-05 47 21.5244119	2000.0 0.0 GLB1069
1254+571 \$	12 56 14.23396865	56 52 25.2372454	2000.0 0.0 GLB1069
1255-316 \$	12 57 59.06080719	-31 55 16.8519066	2000.0 0.0 GLB1069
1257+145 \$	13 00 20.91880783	14 17 18.5314976	2000.0 0.0 GLB1069
1300+580 \$	13 02 52.46528705	57 48 37.6094171	2000.0 0.0 GLB1069
1302-102 \$	13 05 33.01502206	-10 33 19.4284079	2000.0 0.0 GLB1069
1307+121 \$	13 09 33.93242918	11 54 24.5521756	2000.0 0.0 GLB1069
1308+326 \$	13 10 28.66384424	32 20 43.7829568	2000.0 0.0 GLB1069
1308+328 \$	13 10 59.40272644	32 33 34.4495774	2000.0 0.0 GLB1069
1311+678 \$	13 13 27.9840	+67 35 50.357	2000.0 0.0 BLOKQ
1313-333 \$	13 16 7.98593706	-33 38 59.1725136	2000.0 0.0 GLB1069
1315+346 OP326	13 17 36.49418974	34 25 15.9328141	2000.0 0.0 GLB1069
1320-446 \$	13 23 4.24597451	-44 52 33.8540088	2000.0 0.0 GLB1069
1322-427 CEN-A	13 25 27.61518188	-43 01 8.8053650	2000.0 0.0 GLB1069
1323+321 \$	13 26 16.51133639	31 54 9.5192453	2000.0 0.0 GLB1069
1324+224 \$	13 27 .86132214	22 10 50.1630601	2000.0 0.0 GLB1069
1325+256 3C287	13 28 15.924	+25 24 37.58	2000.0 0.0 BLOKQ
1328+254 \$	13 30 37.6892	+25 09 10.978	2000.0 0.0 BLOKQ
1328+307 3C286	13 31 8.28815414	30 30 32.9601072	2000.0 0.0 GLB1069

1329-665 \$	13 32 37.5505	-66 46 50.114564	2000.0 0.0 BLOKQ
1334-127 \$	13 37 39.78277850	-12 57 24.6932117	2000.0 0.0 GLB1069
1334-649 \$	13 37 52.44476043	-65 09 24.8973151	2000.0 0.0 GLB1069
1338+381 \$	13 40 22.95178591	37 54 43.8331759	2000.0 0.0 GLB1069
1342+662 \$	13 43 45.95957799	66 02 25.7450553	2000.0 0.0 GLB1069
1342+663 \$	13 44 8.67967084	66 06 11.6440011	2000.0 0.0 GLB1069
1345+125 \$	13 47 33.36164169	12 17 24.2400434	2000.0 0.0 GLB1069
1347+539 \$	13 49 34.65663232	53 41 17.0401084	2000.0 0.0 GLB1069
1349-101 1352-104	13 52 06.840000	-10 26 21.300000	2000.0 0.0 BLOKQ
1349-439 \$	13 52 56.53493229	-44 12 40.3872936	2000.0 0.0 GLB1069
1351-018 \$	13 54 6.89531451	-02 06 3.1906093	2000.0 0.0 GLB1069
1352-632 \$	13 55 46.61211847	-63 26 42.5749698	2000.0 0.0 GLB1069
1354+195 \$	13 57 4.43666352	19 19 7.3721379	2000.0 0.0 GLB1069
1354-152 \$	13 57 11.24497913	-15 27 28.7865226	2000.0 0.0 GLB1069
1357+769 \$	13 57 55.37152475	76 43 21.0511392	2000.0 0.0 GLB1069
1355-416 \$	13 59 .18309775	-41 52 52.6315225	2000.0 0.0 GLB1069
1400+162 \$	14 02 44.5178	+15 59 56.0347	2000.0 0.0 BLOKQ
1402-012 \$	14 04 45.89545543	-01 30 21.9495686	2000.0 0.0 GLB1069
1402+044 \$	14 05 1.11981265	04 15 35.8190162	2000.0 0.0 GLB1069
1404+286 OQ208	14 07 .39441078	28 27 14.6899551	2000.0 0.0 GLB1069
1406-076 \$	14 08 56.48120406	-07 52 26.6662141	2000.0 0.0 GLB1069
1409+218 \$	14 11 54.86214449	21 34 23.4369349	2000.0 0.0 GLB1069
1413+135 \$	14 15 58.81749532	13 20 23.7128064	2000.0 0.0 GLB1069
1416+067 \$	14 19 8.18018466	06 28 34.8041342	2000.0 0.0 GLB1069
1418+546 \$	14 19 46.59740736	54 23 14.7871932	2000.0 0.0 GLB1069
1417+385 \$	14 19 46.61377038	38 21 48.4751762	2000.0 0.0 GLB1069
1417+273 \$	14 19 59.29706515	27 06 25.5525415	2000.0 0.0 GLB1069
1420+326 \$	14 22 30.37899062	32 23 10.4393583	2000.0 0.0 GLB1069
1421-490 \$	14 24 32.28877	-49 13 50.0425	2000.0 0.0 BLOKQ
1424+240 \$	14 27 .39184244	23 48 .0353931	2000.0 0.0 GLB1069
1424-418 \$	14 27 56.29756579	-42 06 19.4374594	2000.0 0.0 GLB1069
1426+276 NGC5635	14 28 31.74448	+27 24 32.9391	2000.0 0.0 BLOKQ
1430-178 \$	14 32 57.69070535	-18 01 35.2488533	2000.0 0.0 GLB1069
1432+200 \$	14 34 39.79336228	19 52 .7359334	2000.0 0.0 GLB1069
1433+304 \$	14 35 35.40217024	30 12 24.5195006	2000.0 0.0 GLB1069
1435+638 \$	14 36 45.80211735	63 36 37.8665074	2000.0 0.0 GLB1069
1435-218 \$	14 38 9.46935378	-22 04 54.7482290	2000.0 0.0 GLB1069
1442+101 OQ172	14 45 16.46524620	09 58 36.0727713	2000.0 0.0 GLB1069
1443-162 \$	14 45 53.376151	-16 29 1.61234	2000.0 0.0 GLB923Z
1445-161 \$	14 48 15.05411976	-16 20 24.5485223	2000.0 0.0 GLB1069
1448+762 \$	14 48 28.77908319	76 01 11.5972484	2000.0 0.0 GLB1069
1451-375 \$	14 54 27.40977099	-37 47 33.1443916	2000.0 0.0 GLB1069
1451-400 \$	14 54 32.91236796	-40 12 32.5143265	2000.0 0.0 GLB1069
1458+718 3C309.1	14 59 7.58386530	71 40 19.8677977	2000.0 0.0 GLB1069
1459+480 \$	15 00 48.65421825	47 51 15.5382547	2000.0 0.0 GLB1069
1502+106 \$	15 04 24.97978391	10 29 39.1985577	2000.0 0.0 GLB1069
1502+036 \$	15 05 6.47720192	03 26 30.8125617	2000.0 0.0 GLB1069
1504+377 \$	15 06 9.52995442	37 30 51.1323408	2000.0 0.0 GLB1069
1504-166 \$	15 07 4.78694376	-16 52 30.2667633	2000.0 0.0 GLB1069
1508+572 \$	15 10 2.92236223	57 02 43.3760618	2000.0 0.0 GLB1069
1510-089 \$	15 12 50.53293249	-09 05 59.8296478	2000.0 0.0 GLB1069
1511+238 \$	15 13 40.1859	+23 38 35.185	2000.0 0.0 BLOKQ
1511-100 \$	15 13 44.89343470	-10 12 .2645766	2000.0 0.0 GLB1069
1514+197 \$	15 16 56.79618527	19 32 12.9918677	2000.0 0.0 GLB1069
1514-241 \$	15 17 41.81313247	-24 22 19.4758735	2000.0 0.0 GLB1069

1519-273 \$	15 22 37.67599145	-27 30	10.7853531	2000.0 0.0	GLB1069
1532+016 \$	15 34 52.45368251	01 31	4.2067844	2000.0 0.0	GLB1069
1538+149 \$	15 40 49.49149479	14 47	45.8844065	2000.0 0.0	GLB1069
1547+507 \$	15 49 17.46853868	50 38	5.7882292	2000.0 0.0	GLB1069
1546+027 \$	15 49 29.43683948	02 37	1.1634927	2000.0 0.0	GLB1069
1548+056 \$	15 50 35.26924691	05 27	10.4482014	2000.0 0.0	GLB1069
1540-828 \$	15 50 59.141095	-82 58	6.83923	2000.0 0.0	GLB923Z
1548-560 \$	15 52 27.80000	-56 11	57.0000	2000.0 0.0	BLOKQ
1549-790 \$	15 56 58.86987687	-79 14	4.2811034	2000.0 0.0	GLB1069
1555+001 \$	15 57 51.43396448	-00 01	50.4136344	2000.0 0.0	GLB1069
1555-140 \$	15 58 21.949373	-14 09	59.06516	2000.0 0.0	GLB923Z
1557+032 \$	15 59 30.97260848	03 04	48.2569863	2000.0 0.0	GLB1069
1600+434 1600+43A	16 01 40.44393562	43 16	47.7571041	2000.0 0.0	GLB1069
1600+434 1600+43B	16 01 40.51542617	43 16	46.4764164	2000.0 0.0	GLB1069
1600+335 \$	16 02 7.26347851	33 26	53.0723190	2000.0 0.0	GLB1069
1604-333 \$	16 07 34.76225751	-33 31	8.9141507	2000.0 0.0	GLB1069
1606+106 \$	16 08 46.20317954	10 29	7.7758256	2000.0 0.0	GLB1069
1607+268 CTD93	16 09 13.32075014	26 41	29.0360110	2000.0 0.0	GLB1069
1611+343 \$	16 13 41.06425165	34 12	47.9090433	2000.0 0.0	GLB1069
1614+051 \$	16 16 37.555681296	04 59	32.7365923	2000.0 0.0	GLB1069
1610-771 \$	16 17 49.27636587	-77 17	18.4673350	2000.0 0.0	GLB1069
1616+063 \$	16 19 3.68769509	06 13	2.2432636	2000.0 0.0	GLB1069
1619-680 \$	16 24 18.43712915	-68 09	12.4977593	2000.0 0.0	GLB1069
1622-253 \$	16 25 46.89163833	-25 27	38.3268272	2000.0 0.0	GLB1069
1624+416 \$	16 25 57.66972751	41 34	40.6295210	2000.0 0.0	GLB1069
1622-297 \$	16 26 6.02083958	-29 51	26.9710903	2000.0 0.0	GLB1069
1637+826 NGC6251	16 32 31.80475	+82 32	16.1854	2000.0 0.0	BLOKQ
1634+628 3C343	16 34 33.799	+62 45	35.88	2000.0 0.0	BLOKQ
1633+382 1633+38	16 35 15.49297381	38 08	4.5005855	2000.0 0.0	GLB1069
1637+574 \$	16 38 13.45630317	57 20	23.9790665	2000.0 0.0	GLB1069
1637+626 3C343.1	16 38 28.202	+62 34	44.31	2000.0 0.0	BLOKQ
1638+398 NRAO512	16 40 29.63277509	39 46	46.0284913	2000.0 0.0	GLB1069
1638+124 \$	16 40 47.9983	+12 20	02.0435	2000.0 0.0	BLOKQ
1639+230 \$	16 41 25.22719939	22 57	4.0315645	2000.0 0.0	GLB1069
1642+690 \$	16 42 7.84852386	68 56	39.7564275	2000.0 0.0	GLB1069
1641+399 3C345	16 42 58.80996117	39 48	36.9940233	2000.0 0.0	GLB1069
1647-296 \$	16 50 39.543915	-29 43	46.94995	2000.0 0.0	GLB923Z
1652+398 DA426	16 53 52.21668964	39 45	36.6088273	2000.0 0.0	GLB1069
1656+348 \$	16 58 1.41921256	34 43	28.4023886	2000.0 0.0	GLB1069
1656+477 \$	16 58 2.777959247	47 37	49.2313650	2000.0 0.0	GLB1069
1655+077 \$	16 58 9.01147430	07 41	27.5402880	2000.0 0.0	GLB1069
1656+053 \$	16 58 33.44734163	05 15	16.4441002	2000.0 0.0	GLB1069
1657-261 \$	17 00 53.15404098	-26 10	51.7252977	2000.0 0.0	GLB1069
1705+456 \$	17 07 17.75339834	45 36	10.5527090	2000.0 0.0	GLB1069
1705+018 \$	17 07 34.41526961	01 48	45.6993093	2000.0 0.0	GLB1069
1706-174 \$	17 09 34.34538852	-17 28	53.3650306	2000.0 0.0	GLB1069
1709-342 \$	17 13 09.912492	-34 18	28.916200	2000.0 0.0	BLOKQ
1710-269 \$	17 13 31.250514	-26 58	52.322930	2000.0 0.0	BLOKQ
1710-323 \$	17 13 50.788860	-32 26	12.014750	2000.0 0.0	BLOKQ
1716+686 \$	17 16 13.943	+68 36	38.70	2000.0 0.0	BLOKQ
1714-336 \$	17 17 35.997602	-33 42	08.179560	2000.0 0.0	BLOKQ
1717+178 \$	17 19 13.04847044	17 45	6.4371186	2000.0 0.0	GLB1069
1718-649 \$	17 23 41.02977973	-65 00	36.6141704	2000.0 0.0	GLB1069
1726+455 \$	17 27 27.65080867	45 30	39.7313322	2000.0 0.0	GLB1069
1727+502 \$	17 28 18.62380183	50 13	10.4702688	2000.0 0.0	GLB1069

1725+044 \$		17 28 24.95271889	04 27	4.9139105	2000.0 0.0	GLB1069
1730-130 NRAO530		17 33 2.70578520	-13 04	49.5482731	2000.0 0.0	GLB1069
1729-373 \$		17 33 15.19268409	-37 22	32.3960970	2000.0 0.0	GLB1069
1732+389 \$		17 34 20.57851494	38 57	51.4431052	2000.0 0.0	GLB1069
1734+363 \$		17 35 48.08668276	36 16	45.6114777	2000.0 0.0	GLB1069
1734+508 \$		17 35 49.00517838	50 49	11.5657710	2000.0 0.0	GLB1069
1733-565 \$		17 37 35.77040833	-56 34	3.1559644	2000.0 0.0	GLB1069
1738+499 \$		17 39 27.39049281	49 55	3.3682219	2000.0 0.0	GLB1069
1738+476 \$		17 39 57.12907125	47 37	58.3614681	2000.0 0.0	GLB1069
1739+522 \$		17 40 36.97785175	52 11	43.4074848	2000.0 0.0	GLB1069
1741-038 \$		17 43 58.85614027	-03 50	4.6167340	2000.0 0.0	GLB1069
1741-312 \$		17 44 23.582762	-31 16	35.972930	2000.0 0.0	BLOKQ
1740-517 \$		17 44 25.45033042	-51 44	43.7933066	2000.0 0.0	GLB1069
1743+173 \$		17 45 35.20817624	17 20	1.4235731	2000.0 0.0	GLB1069
1742-289 SGR-A		17 45 40.08483	-29 00	27.7795	2000.0 0.0	BLOKQ
1745+624 \$		17 46 14.03413712	62 26	54.7384404	2000.0 0.0	GLB1069
1746+469 1746+470		17 47 26.64727984	46 58	50.9262886	2000.0 0.0	GLB1069
1749+701 \$		17 48 32.84023829	70 05	50.7689597	2000.0 0.0	GLB1069
1749+096 \$		17 51 32.81857597	09 39	.7284433	2000.0 0.0	GLB1069
1748-253 \$		17 51 51.26290149	-25 24	.0608781	2000.0 0.0	GLB1069
1751+441 \$		17 53 22.64791742	44 09	45.6860313	2000.0 0.0	GLB1069
1751+288 \$		17 53 42.47363148	28 48	4.9389702	2000.0 0.0	GLB1069
1758+388 \$		18 00 24.76536598	38 48	30.6976175	2000.0 0.0	GLB1069
1803+784 \$		18 00 45.68392129	78 28	4.0184929	2000.0 0.0	GLB1069
1756-663 \$		18 01 18.0830	-66 23	00.985	2000.0 0.0	BLOKQ
1800+440 \$		18 01 32.31485103	44 04	21.9003775	2000.0 0.0	GLB1069
1758-651 \$		18 03 23.49660223	-65 07	36.7611296	2000.0 0.0	GLB1069
1807+698 3C371		18 06 50.68066427	69 49	28.1085665	2000.0 0.0	GLB1069
1806+456 \$		18 08 21.88590762	45 42	20.8663847	2000.0 0.0	GLB1069
1806-458 \$		18 09 57.87185060	-45 52	41.0149046	2000.0 0.0	GLB1069
1813-241 \$		18 16 49.6	-24 05	59.15	2000.0 0.0	BLOKQ
1814-637 \$		18 19 35.00253958	-63 45	48.1948441	2000.0 0.0	GLB1069
1815-553 \$		18 19 45.39953367	-55 21	20.7453568	2000.0 0.0	GLB1069
1817-254 \$		18 20 57.84866898	-25 28	12.5847189	2000.0 0.0	GLB1069
1826+796 \$		18 23 14.10870906	79 38	49.0027221	2000.0 0.0	GLB1069
1821+107 \$		18 24 2.85525790	10 44	23.7738690	2000.0 0.0	GLB1069
1823+568 \$		18 24 7.06837890	56 51	1.4907260	2000.0 0.0	GLB1069
1823-455 \$		18 27 12.6	-45 32	28.	2000.0 0.0	BLOKQ
1828+487 3C380		18 29 31.72483	+48 44	46.9515	2000.0 0.0	BLOKQ
1827-360 \$		18 30 58.8809	-36 02	30.152	2000.0 0.0	BLOKQ
1829-106 \$		18 32 20.842	-10 35	11.29	2000.0 0.0	BLOKQ
1830+285 \$		18 32 50.18561744	28 33	35.9552151	2000.0 0.0	GLB1069
1830-211 1830-21A		18 33 39.931556	-21 03	39.81967	2000.0 0.0	GLB923Z
1830-211 1830-21B		18 33 39.881614	-21 03	40.60798	2000.0 0.0	GLB923Z
1830-211 \$		18 33 39.9	-21 03	40.	2000.0 0.0	BLOKQ
1829-718 \$		18 35 37.20412457	-71 49	58.2186319	2000.0 0.0	GLB1069
1831-711 \$		18 37 28.71492644	-71 08	43.5544152	2000.0 0.0	GLB1069
1845+797 3C390.3		18 42 8.98980429	79 46	17.1283984	2000.0 0.0	GLB1069
1842+681 \$		18 42 33.64164527	68 09	25.2278357	2000.0 0.0	GLB1069
1843+400 \$		18 45 11.13147442	40 07	51.5770796	2000.0 0.0	GLB1069
1844+121 \$		18 46 31.6	+12 14	1.	2000.0 0.0	BLOKQ
1849+670 \$		18 49 16.07227269	67 05	41.6801912	2000.0 0.0	GLB1069
1848+333 \$		18 50 04.792	+33 21	45.83	2000.0 0.0	BLOKQ
1856+737 1856+736		18 54 57.29992707	73 51	19.9072258	2000.0 0.0	GLB1069
1855+031 \$		18 58 02.338	+03 13	16.40	2000.0 0.0	BLOKQ

1901+319	3C395	19 02 55.93887899	31	59	41.7018937	2000.0 0.0	GLB1069
1908-201	\$	19 11 9.65289328	-20	06	55.1091181	2000.0 0.0	GLB1069
1909+048	SS433	19 11 49.55474	+04	58	56.9486	2000.0 0.0	BLOKQ
1903-802	\$	19 12 40.01913384	-80	10	5.9462069	2000.0 0.0	GLB1069
1920-211	\$	19 23 32.18981513	-21	04	33.3328398	2000.0 0.0	GLB1069
1921-293	\$	19 24 51.05595818	-29	14	30.1210139	2000.0 0.0	GLB1069
1923+210	\$	19 25 59.60537025	21	06	26.1620842	2000.0 0.0	GLB1069
1928+738	\$	19 27 48.49521021	73	58	1.5699881	2000.0 0.0	GLB1069
1926+087	\$	19 28 40.85549724	08	48	48.4129004	2000.0 0.0	GLB1069
1925-610	\$	19 30 6.16004091	-60	56	9.1843201	2000.0 0.0	GLB1069
1929+226	\$	19 31 24.91678618	22	43	31.2589562	2000.0 0.0	GLB1069
1932+106	\$	19 34 35.02557901	10	43	40.3655721	2000.0 0.0	GLB1069
1932+204	\$	19 35 10.47292171	20	31	54.1537459	2000.0 0.0	GLB1069
1934+207	\$	19 36 48.015	+20	51	36.77	2000.0 0.0	BLOKQ
1933-400	\$	19 37 16.21730006	-39	58	1.5522464	2000.0 0.0	GLB1069
1934-638	\$	19 39 25.02624835	-63	42	45.6250121	2000.0 0.0	GLB1069
1936-155	\$	19 39 26.65774342	-15	25	43.0583012	2000.0 0.0	GLB1069
1937-101	\$	19 39 57.25656128	-10	02	41.5208830	2000.0 0.0	GLB1069
1935-692	\$	19 40 25.52815721	-69	07	56.9717051	2000.0 0.0	GLB1069
1936-623	\$	19 41 21.76842537	-62	11	21.0555465	2000.0 0.0	GLB1069
1943+228	\$	19 46 6.25194298	23	00	4.4106554	2000.0 0.0	GLB1069
1947+079	\$	19 50 05.5397	+08	07	13.982	2000.0 0.0	BLOKQ
1951+355	\$	19 53 30.87571047	35	37	59.3588158	2000.0 0.0	GLB1069
1950-613	\$	19 55 10.77049983	-61	15	19.1399017	2000.0 0.0	GLB1069
1954+513	\$	19 55 42.73825431	51	31	48.5462355	2000.0 0.0	GLB1069
1955+335	\$	19 57 40.54996204	33	38	27.9442444	2000.0 0.0	GLB1069
1954-388	\$	19 57 59.81927878	-38	45	6.3557836	2000.0 0.0	GLB1069
1957+405	CYG_A	19 59 28.35839	+40	44	02.4249	2000.0 0.0	BLOKQ
1958-179	\$	20 00 57.09044782	-17	48	57.6725667	2000.0 0.0	GLB1069
2000-330	\$	20 03 24.11628024	-32	51	45.1324140	2000.0 0.0	GLB1069
2007+777	\$	20 05 30.99852229	77	52	43.2476257	2000.0 0.0	GLB1069
2005+642	\$	20 06 17.69460294	64	24	45.4178858	2000.0 0.0	GLB1069
2005+403	\$	20 07 44.94488188	40	29	48.6046137	2000.0 0.0	GLB1069
2005-070	2008-068	20 08 33.6	-06	53	00.0	2000.0 0.0	BLOKQ
2005-489	\$	20 09 25.39069149	-48	49	53.7214195	2000.0 0.0	GLB1069
2008-068	OW-015	20 11 14.21581482	-06	44	3.5551504	2000.0 0.0	GLB1069
2008-159	\$	20 11 15.71093770	-15	46	40.2535194	2000.0 0.0	GLB1069
2013+370	\$	20 15 28.71263	+37	10	59.6935	2000.0 0.0	BLOKQ
2017+745	2017+743	20 17 13.07928298	74	40	47.9999620	2000.0 0.0	GLB1069
2021+614	\$	20 22 6.68172164	61	36	58.8047424	2000.0 0.0	GLB1069
2021+317	\$	20 23 19.01734560	31	53	2.3059763	2000.0 0.0	GLB1069
2022+542	\$	20 23 55.830	+54	27	35.79	2000.0 0.0	BLOKQ
2023+335	2023+336	20 25 10.84208827	33	43	.2143234	2000.0 0.0	GLB1069
2027+383	\$	20 28 54.111	+38	32	47.67	2000.0 0.0	BLOKQ
2030+547	\$	20 31 47.95856908	54	55	3.1409114	2000.0 0.0	GLB1069
2029+121	\$	20 31 54.99427726	12	19	41.3404750	2000.0 0.0	GLB1069
2030+407	CYG_X-3	20 32 25.76740	+40	57	28.2794	2000.0 0.0	BLOKQ
2037+511	3C418	20 38 37.03475964	51	19	12.6626137	2000.0 0.0	GLB1069
2037+421	DR21	20 39 01.29597	+42	19	33.9579	2000.0 0.0	BLOKQ
2037-253	\$	20 40 8.77286440	-25	07	46.6624936	2000.0 0.0	GLB1069
2044-168	\$	20 47 19.659	-16	39	05.83	2000.0 0.0	BLOKQ
2048+312	CL4	20 50 51.13147666	31	27	27.3735325	2000.0 0.0	GLB1069
2051+745	\$	20 51 33.73464410	74	41	40.4979055	2000.0 0.0	GLB1069
2052-474	\$	20 56 16.35980715	-47	14	47.6276380	2000.0 0.0	GLB1069
2054-377	\$	20 57 41.60343663	-37	34	2.9902957	2000.0 0.0	GLB1069

2059+034 \$	21 01 38.83416191	03 41	31.3207691	2000.0 0.0	GLB1069
2058-425 \$	21 01 59.11420905	-42 19	16.1614062	2000.0 0.0	GLB1069
2100+468 \$	21 02 17.032681	47 02	16.43347	2000.0 0.0	GLB923Z
2059-786 \$	21 05 44.96143506	-78 25	34.5463219	2000.0 0.0	GLB1069
2106-413 \$	21 09 33.18856308	-41 10	20.6051211	2000.0 0.0	GLB1069
2113+293 \$	21 15 29.41344988	29 33	38.3668683	2000.0 0.0	GLB1069
2109-811 \$	21 16 30.84586981	-80 53	55.2232165	2000.0 0.0	GLB1069
2115-305 \$	21 18 10.59764563	-30 19	11.6061854	2000.0 0.0	GLB1069
2121+053 \$	21 23 44.51739093	05 35	22.0931673	2000.0 0.0	GLB1069
2126-158 \$	21 29 12.17588462	-15 38	41.0407926	2000.0 0.0	GLB1069
2128+048 \$	21 30 32.87755435	05 02	17.4744362	2000.0 0.0	GLB1069
2128-123 \$	21 31 35.26175832	-12 07	4.7959621	2000.0 0.0	GLB1069
2131-021 \$	21 34 10.30961355	-01 53	17.2389973	2000.0 0.0	GLB1069
2134+004 2134+00	21 36 38.58632352	00 41	54.2132326	2000.0 0.0	GLB1069
2136+141 \$	21 39 1.30925935	14 23	35.9921217	2000.0 0.0	GLB1069
2143-156 \$	21 46 22.97933414	-15 25	43.8868656	2000.0 0.0	GLB1069
2144+092 \$	21 47 10.16296720	09 29	46.6722343	2000.0 0.0	GLB1069
2142-758 \$	21 47 12.73032273	-75 36	13.2247733	2000.0 0.0	GLB1069
2145+067 \$	21 48 5.45867976	06 57	38.6041487	2000.0 0.0	GLB1069
2147+068 2147+066	21 49 48.3621	+07 03	21.9609	2000.0 0.0	BLOKQ
2147+145 \$	21 50 23.600	+14 49	47.92	2000.0 0.0	BLOKQ
2149+056 \$	21 51 37.87548763	05 52	12.9541012	2000.0 0.0	GLB1069
2149-307 2149-306	21 51 55.52398653	-30 27	53.6978011	2000.0 0.0	GLB1069
2146-783 \$	21 52 3.15452955	-78 07	6.6394074	2000.0 0.0	GLB1069
2150+173 \$	21 52 24.81941134	17 34	37.7948315	2000.0 0.0	GLB1069
2152-699 \$	21 57 5.98057097	-69 41	23.6858346	2000.0 0.0	GLB1069
2155-152 \$	21 58 6.28187063	-15 01	9.3275819	2000.0 0.0	GLB1069
2155-304 \$	21 58 52.06506102	-30 13	32.1186220	2000.0 0.0	GLB1069
2200+420 VR422201	22 02 43.29138884	42 16	39.9799070	2000.0 0.0	GLB1069
2200-238 \$	22 02 56.0	-23 35	11.	2000.0 0.0	BLOKQ
2201+315 \$	22 03 14.97579632	31 45	38.2699807	2000.0 0.0	GLB1069
2203-188 \$	22 06 10.4130	-18 35	38.770	2000.0 0.0	BLOKQ
2204-540 \$	22 07 43.73327385	-53 46	33.8199121	2000.0 0.0	GLB1069
2209+236 \$	22 12 5.96631368	23 55	40.5435851	2000.0 0.0	GLB1069
2210-257 \$	22 13 2.49795567	-25 29	30.0799103	2000.0 0.0	GLB1069
2211-388 \$	22 14 38.56927446	-38 35	45.0107384	2000.0 0.0	GLB1069
2214+350 \$	22 16 20.00992738	35 18	14.1800227	2000.0 0.0	GLB1069
2216-038 \$	22 18 52.03772773	-03 35	36.8795687	2000.0 0.0	GLB1069
2223-052 3C446	22 25 47.25927921	-04 57	1.3907422	2000.0 0.0	GLB1069
2227-088 \$	22 29 40.08434290	-08 32	54.4353607	2000.0 0.0	GLB1069
2229+695 \$	22 30 36.46976482	69 46	28.0771220	2000.0 0.0	GLB1069
2227-399 \$	22 30 40.27858497	-39 42	52.0670683	2000.0 0.0	GLB1069
2229+391 3C449	22 31 20.64093	+39 21	30.9642	2000.0 0.0	BLOKQ
2230+114 CTA102	22 32 36.40891609	11 43	50.9041897	2000.0 0.0	GLB1069
2232-488 \$	22 35 13.23656244	-48 35	58.7945738	2000.0 0.0	GLB1069
2234+282 \$	22 36 22.47086610	28 28	57.4132853	2000.0 0.0	GLB1069
2233-148 \$	22 36 34.08717329	-14 33	22.1891901	2000.0 0.0	GLB1069
2243-123 \$	22 46 18.23196857	-12 06	51.2771313	2000.0 0.0	GLB1069
2245-328 \$	22 48 38.68573547	-32 35	52.1882791	2000.0 0.0	GLB1069
2251+158 3C454.3	22 53 57.74793975	16 08	53.5608217	2000.0 0.0	GLB1069
2252-090 2252-089	22 55 4.23977095	-08 44	4.0217375	2000.0 0.0	GLB1069
2253+417 \$	22 55 36.70785468	42 02	52.5325909	2000.0 0.0	GLB1069
2254+074 \$	22 57 17.30310850	07 43	12.3029200	2000.0 0.0	GLB1069
2254+024 \$	22 57 17.56309241	02 43	17.5118683	2000.0 0.0	GLB1069
2255+416 \$	22 57 21.9144	+41 54	17.9512	2000.0 0.0	BLOKQ

2255-282 \$	22 58 5.96288901	-27	58	21.2566929	2000.0 0.0	GLB1069
2259-375 \$	23 02 23.908626	-37	18	6.82591	2000.0 0.0	GLB923Z
2300-307 \$	23 03 5.82104713	-30	30	11.4734138	2000.0 0.0	GLB1069
2310-417 \$	23 12 55.6124	-41	26	56.138	2000.0 0.0	BLOKQ
2311-452 \$	23 14 9.38283226	-44	55	49.2378152	2000.0 0.0	GLB1069
2312-319 \$	23 14 48.50059445	-31	38	39.5278183	2000.0 0.0	GLB1069
2314+038 \$	23 16 35.092000	+04	05	19.820000	2000.0 0.0	BLOKQ
2318+049 \$	23 20 44.85660373	05	13	49.9524548	2000.0 0.0	GLB1069
2319+272 \$	23 21 59.86223042	27	32	46.4436549	2000.0 0.0	GLB1069
2320+506 \$	23 22 25.98217674	50	57	51.9640020	2000.0 0.0	GLB1069
2320-035 \$	23 23 31.95375420	-03	17	5.0234796	2000.0 0.0	GLB1069
2322-411 \$	23 25 03.4210	-40	51	30.112	2000.0 0.0	BLOKQ
2325-150 \$	23 27 47.96425918	-14	47	55.7503662	2000.0 0.0	GLB1069
2325-151 \$	23 28 31.6	-14	54	17.	2000.0 0.0	BLOKQ
2326-477 \$	23 29 17.70434197	-47	30	19.1147994	2000.0 0.0	GLB1069
2328+107 \$	23 30 40.85224492	11	00	18.7095580	2000.0 0.0	GLB1069
2329-162 \$	23 31 38.65245346	-15	56	57.0093809	2000.0 0.0	GLB1069
2329-384 \$	23 31 59.47610764	-38	11	47.6503359	2000.0 0.0	GLB1069
2331-240 \$	23 33 55.23776174	-23	43	40.6575217	2000.0 0.0	GLB1069
2333-528 \$	23 36 12.14453084	-52	36	21.9504191	2000.0 0.0	GLB1069
2335-027 \$	23 37 57.33909292	-02	30	57.6289874	2000.0 0.0	GLB1069
2335+267 3C465	23 38 29.37512	+27	01	53.7613	2000.0 0.0	BLOKQ
2337+264 \$	23 40 29.02947018	26	41	56.8043372	2000.0 0.0	GLB1069
2344+092 2344+09A	23 46 36.83856307	09	30	45.5151066	2000.0 0.0	GLB1069
2344+092 2344+09B	23 47 09.25631	+09	30	47.3592	2000.0 0.0	BLOKQ
2345-167 \$	23 48 2.60853279	-16	31	12.0219674	2000.0 0.0	GLB1069
2351+456 \$	23 54 21.68029249	45	53	4.2366123	2000.0 0.0	GLB1069
2351-154 \$	23 54 30.19518957	-15	13	11.2132006	2000.0 0.0	GLB1069
2352+495 \$	23 55 9.45817249	49	50	8.3402004	2000.0 0.0	GLB1069
2353-686 \$	23 56 .68151435	-68	20	3.4718879	2000.0 0.0	GLB1069
2354-116 \$	23 57 29.8	-11	25	17.	2000.0 0.0	BLOKQ
2355-534 \$	23 57 53.26609000	-53	11	13.6891848	2000.0 0.0	GLB1069
2355-106 \$	23 58 10.88241496	-10	20	8.6113012	2000.0 0.0	GLB1069
2356+385 \$	23 59 33.18079201	38	50	42.3185861	2000.0 0.0	GLB1069

tracks.cat

```
*  
* TRACKS.CAT - standard track assignments  
*  
*Mode VC# Track Assignment  
  
A  
- 1 1(1,15)  
- 2 1(2,16)  
- 3 1(3,17)  
- 4 1(4,18)  
- 5 1(5,19)  
- 6 1(6,20)  
- 7 1(7,21)  
- 8 1(8,22)  
- 9 1(9,23)  
- 10 1(10,24)  
- 11 1(11,25)  
- 12 1(12,26)  
- 13 1(13,27)  
- 14 1(14,28)  
  
B  
- 1 1(1,15) 2(2,16)  
- 2 1(3,17) 2(4,18)  
- 3 1(5,19) 2(6,20)  
- 4 1(7,21) 2(8,22)  
- 5 1(9,23) 2(10,24)  
- 6 1(11,25) 2(12,26)  
- 7 1(13,27) 2(14,28)  
  
C  
- 1 1(15) 2(16)  
- 2 1(1) 2(2)  
- 3 1(17) 2(18)  
- 4 1(3) 2(4)  
- 5 1(19) 2(20)  
- 6 1(5) 2(6)  
- 7 1(21) 2(22)  
- 8 1(7) 2(8)  
- 9 1(23) 2(24)  
- 10 1(9) 2(10)  
- 11 1(25) 2(26)  
- 12 1(11) 2(12)  
- 13 1(27) 2(28)  
- 14 1(13) 2(14)  
  
E  
- 1 1(1) 2(15) 3(2) 4(16)  
- 2 1(3) 2(17) 3(4) 4(18)  
- 3 1(5) 2(19) 3(6) 4(20)  
- 4 1(7) 2(21) 3(8) 4(22)  
- 5 1(9) 2(23) 3(10) 4(24)  
- 6 1(11) 2(25) 3(12) 4(26)
```

- 7 1(13) 2(27) 3(14) 4(28)
V1-8U1
- 1 1(-1) 2(0) 3(15) 4(16)
- 2 1(1) 2(2) 3(17) 4(18)
- 3 1(3) 2(4) 3(19) 4(20)
- 4 1(5) 2(6) 3(21) 4(22)
- 5 1(7) 2(8) 3(23) 4(24)
- 6 1(9) 2(10) 3(25) 4(26)
- 7 1(11) 2(12) 3(27) 4(28)
- 8 1(13) 2(14) 3(29) 4(30)
V2-8U2
- 1 1(-1,,0)
- 2 1(3,,4)
- 3 1(7,,8)
- 4 1(11,,12)
- 5 1(15,,16)
- 6 1(19,,20)
- 7 1(23,,24)
- 8 1(27,,28)
V2-8U1
- 1 1(-1) 2(0)
- 2 1(3) 2(4)
- 3 1(7) 2(8)
- 4 1(11) 2(12)
- 5 1(15) 2(16)
- 6 1(19) 2(20)
- 7 1(23) 2(24)
- 8 1(27) 2(28)
V4-8U1
- 1 1(-1)
- 2 1(7)
- 3 1(15)
- 4 1(23)
- 5 1(0)
- 6 1(8)
- 7 1(16)
- 8 1(24)
V4-2U2
- 1 1(-1,,7) 2(0,,8)
- 2 1(15,,23) 2(16,,24)
V216U1
- 1 1(-1)
- 2 1(3)
- 3 1(7)
- 4 1(11)
- 5 1(15)
- 6 1(19)
- 7 1(23)
- 8 1(27)
- 9 1(0)
- 10 1(4)
- 11 1(8)
- 12 1(12)
- 13 1(16)
- 14 1(20)

- 15 1(24)
- 16 1(28)

*

M416U1

- 1 1(-1)
- 2 1(7)
- 3 1(15)
- 4 1(23)
- 5 1(0)
- 6 1(8)
- 7 1(16)
- 8 1(24)
- 9 101(-1)
- 10 101(7)
- 11 101(15)
- 12 101(23)
- 13 101(0)
- 14 101(8)
- 15 101(16)
- 16 101(24)

*

M114UL2

- 1 1(-1,1,3,5)
- 2 1(7,9,11,13)
- 3 1(15,17,19,21)
- 4 1(23,25,27,29)
- 5 1(0,2,4,6)
- 6 1(8,10,12,14)
- 7 1(16,18,20,22)
- 8 101(-1,1,3,5)
- 9 101(7,9,11,13)
- 10 101(15,17,19,21)
- 11 101(23,25,27,29)
- 12 101(0,2,4,6)
- 13 101(8,10,12,14)
- 14 101(16,18,20,22)